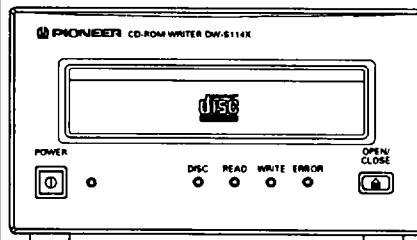


Service Manual



ORDER NO.
RRV1362

CD-ROM WRITER DW-S114X

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	DW-S114X		
TUCGM/WL	○	AC100-240V	Automatic select

CONTENTS

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.



WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.



NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

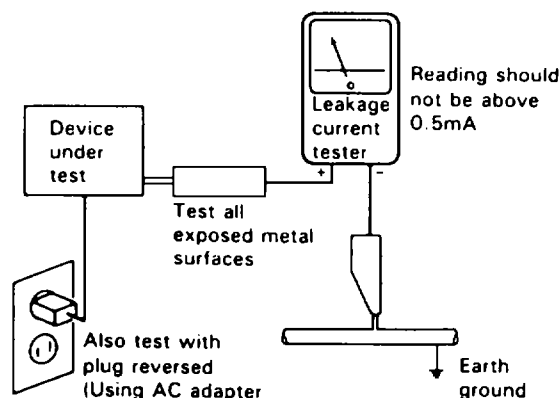
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.



LASER
Kuva 1
Lasersäteilyn
varoitusmerkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.



LASER
Picture 1
Warning sign for
laser radiation

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSÆTTELSE FOR
STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA
DEL ÄR ÖPPNAD OCH SPÄRREN
ÄR URKOPPLAD. BETRakta EJ STRÅLEN.

IMPORTANT

THIS PIONEER APPARATUS CONTAINS
LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

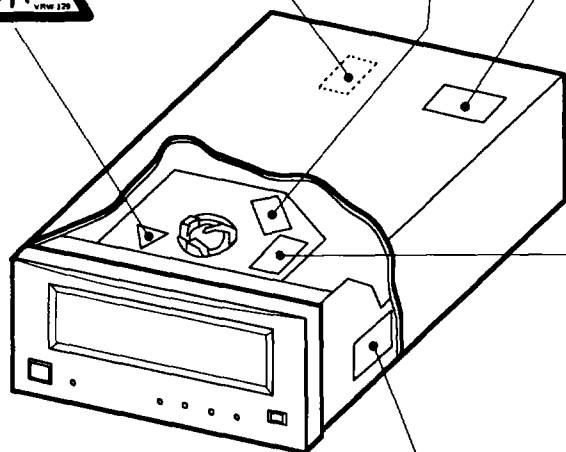
LABEL CHECK

感電注意

CAUTION
RISK OF ELECTRIC SHOCK
VRW1105-A

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM
PRW1018

CLASS 1 LASER PRODUCT
LASER KLASSE 1
ORW1129



ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAF-
BRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASERSTRÅLUNG TRIFFT AUS, WEENN DECKEL
(ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF status of the clamp switch (S1005) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the clamp switch is OFF.

Thus, the interlock will no longer function if the clamp switch (S1005) is deliberately shorted.

The interlock also does not function in the test mode *1. Laser diode oscillation will continue, if between collector and emitter of Q102 and Q110 mounted on the HAMP UNIT is connected to GND, shorted to each other (fault condition).

2. If the fault condition described in 1 is induced with the cover removed and the objective lens extending past the outer circumference of the disc clamped diameter, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*1 : Refer to page 42.

VARO!

Avattaessa ja suojalukitus ohitetta-
essa olet alttiina näkymättömälle
lasersäteilylle. Älä katso säteeseen.

VARNING!

Osynlig laserstrålning när denna del
är öppnad och spärren är urkopplad.
Betrakta ej strålen.

VRW1297-A

2. EXPLODED VIEWS, PACKING AND PARTS LIST

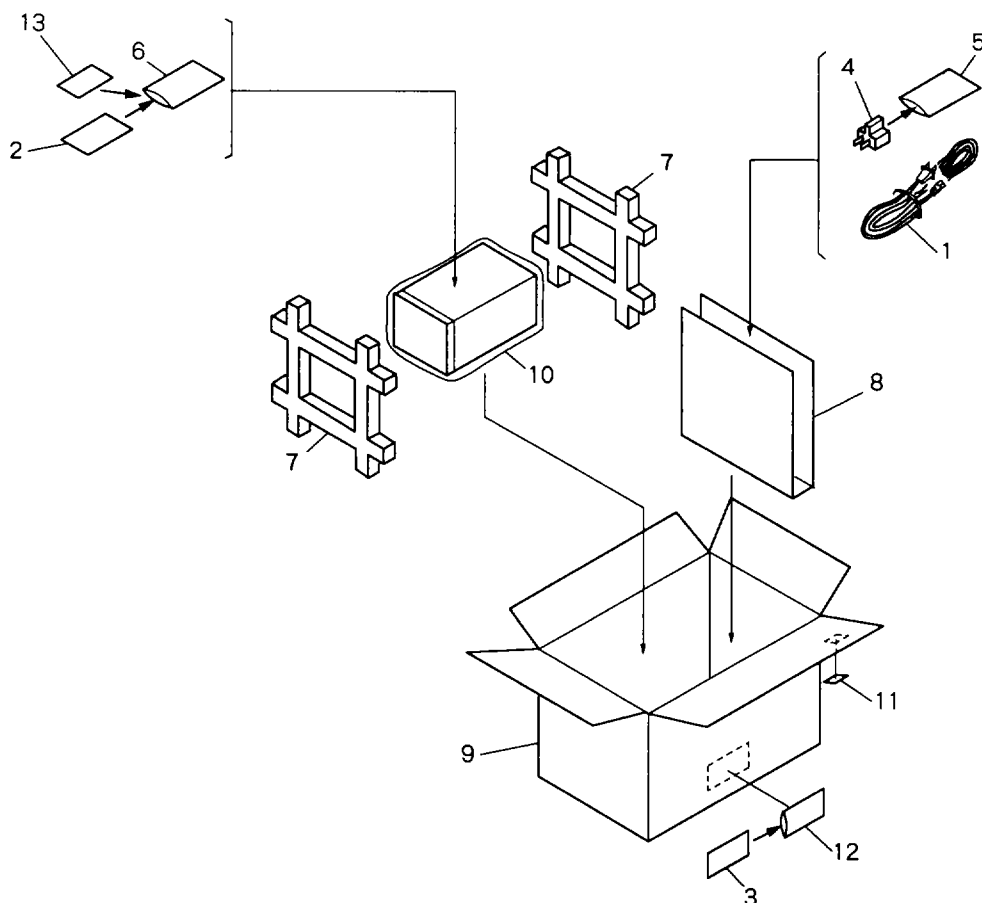
NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

2.1 PACKING

Parts List

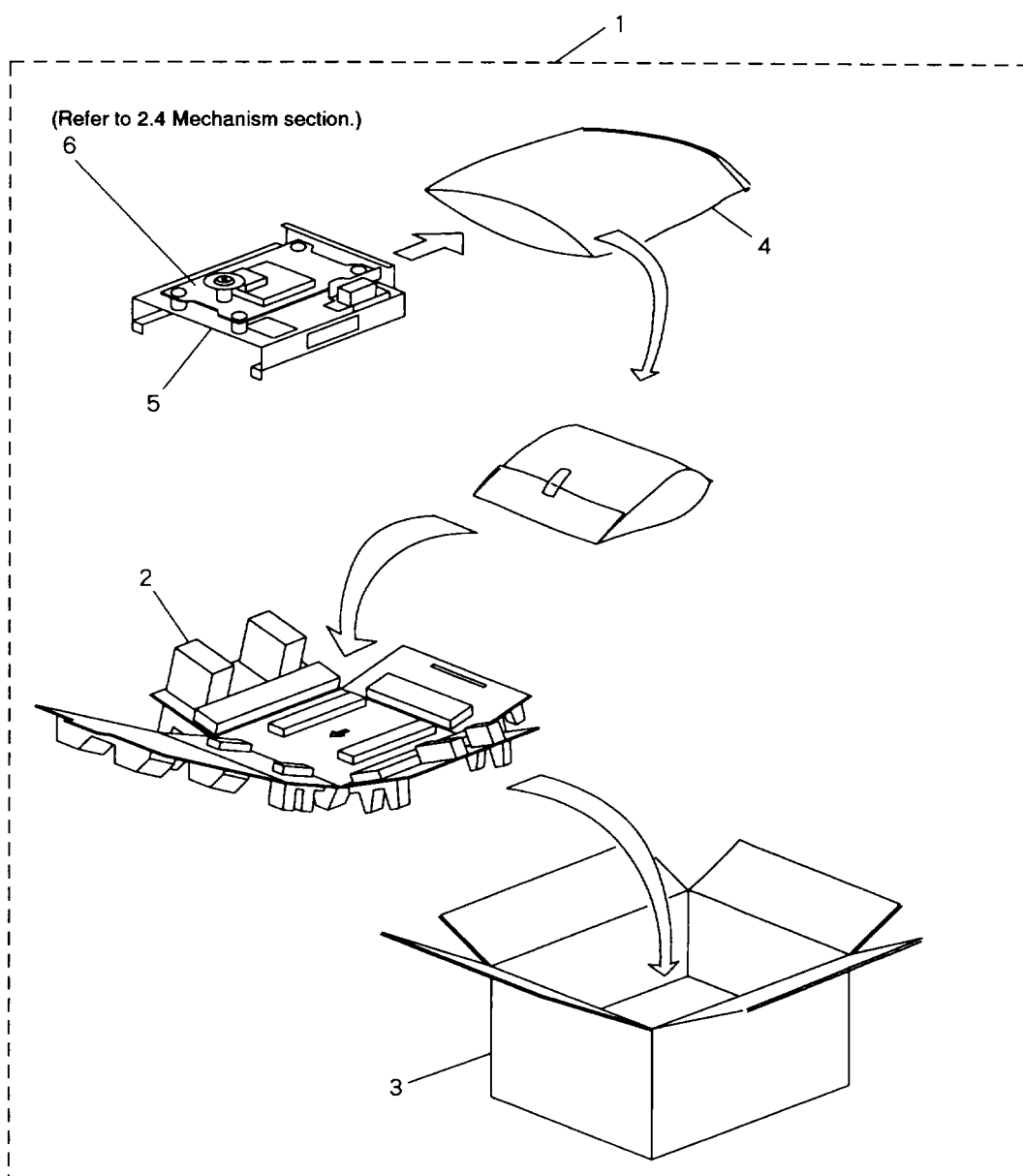
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
△	1	Power cord with plug	DDG1028	NSP	10	Sheet	RHX1006
	2	Operating instructions (Japanese/English/French/German)	DRC1023		11	Caution label	VRM1044
NSP	3	Follow up card	DRY1032		12	Follow card bag	DHL1011
	4	Conversion connector	OKX1002		13	Disc table	DRY1168
NSP	5	Polyethylene bag	Z21-033				
	6	Polyethylene bag	Z21-038				
	7	Protector A	DHA1061				
	8	Protector C	DHA1088				
	9	Packing case	DHG1656				



2.2 PACKING (Servo Mechanism Assy for Service)

Parts List

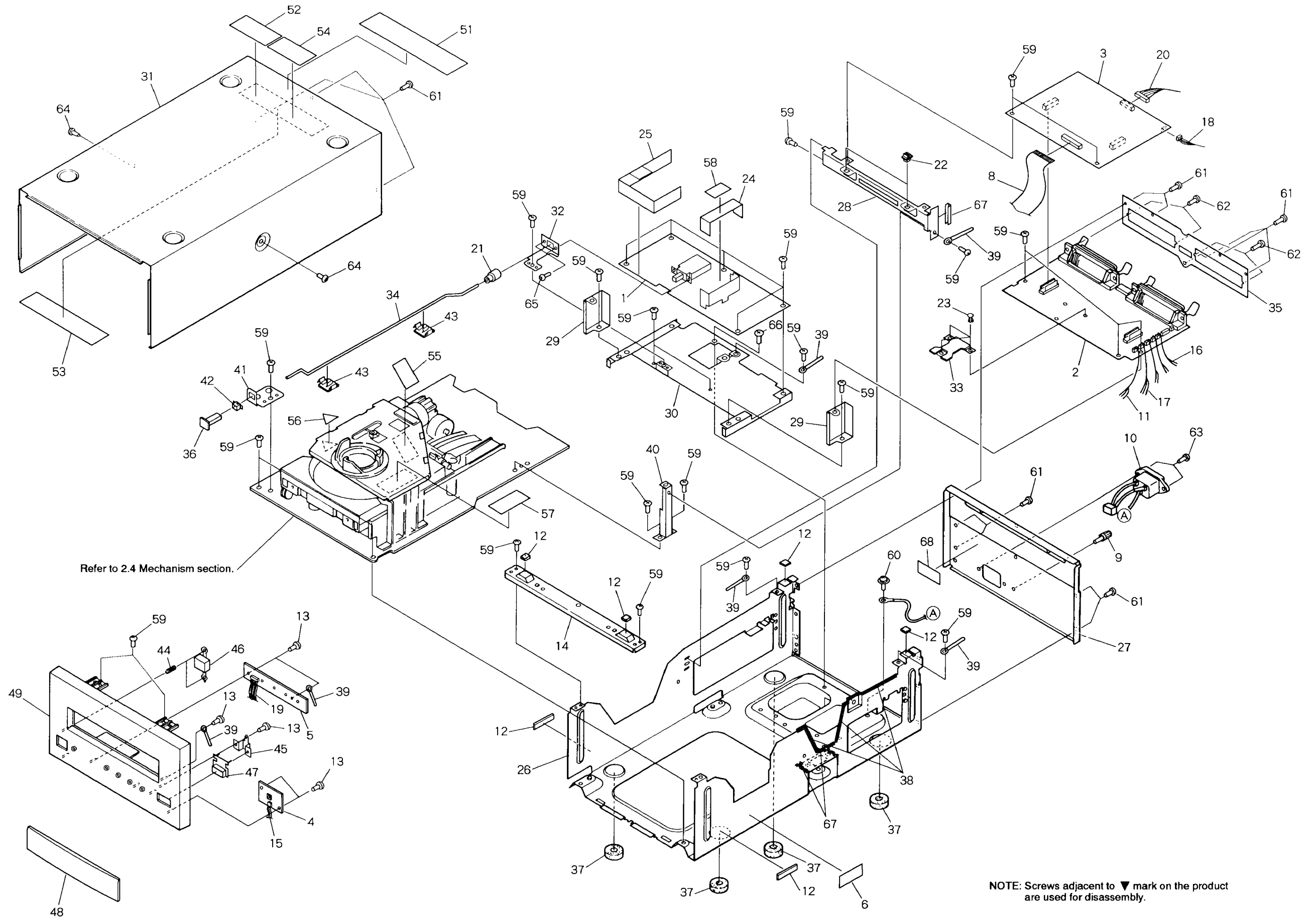
Mark	No.	Description	Part No.
	1	Servo mechanism assy-S	DXX2283
	2	Protector	DHA1326
	3	Packing case(service)	DHG1665
	4	Polyethylene bag	DHL1093
	5	RW box	DNE1280
	6	Servo mechanism assy	DXB1530



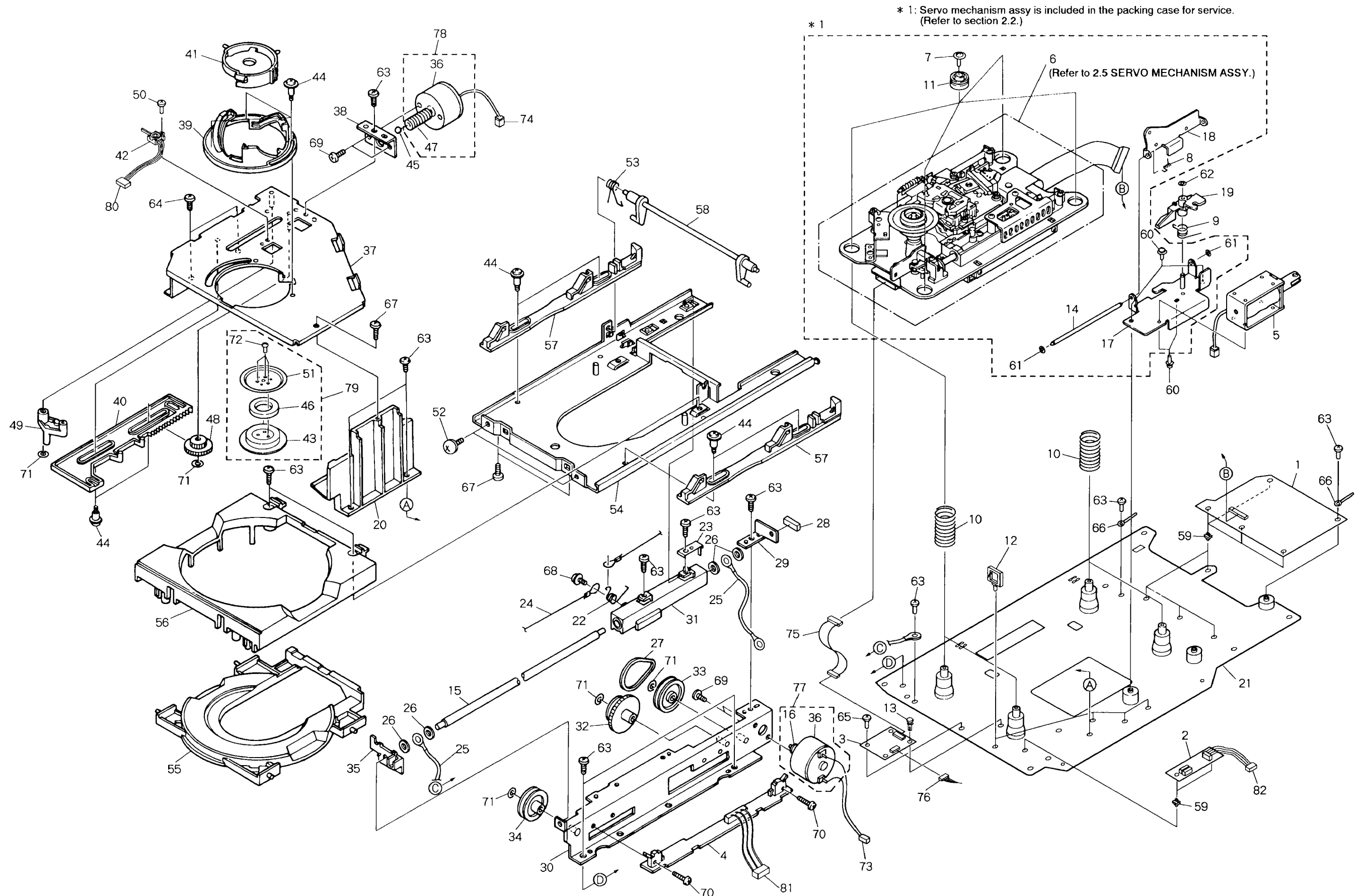
2.3 EXTERIOR

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
△	1	POWER assy	DWR1133	46	Power button	DNK2411	
	2	MAIN unit	DWX1614	47	Eject button	DNK3076	
	3	SUB unit	DWX1615	48	Tray bezel	DNK3172	
	4	EJSB unit	DWX1617	49	Front panel assy	DXA1764	
	5	LEDB unit	DWX1620	50	• • • • •		
NSP	6	Caution label HE	VRW1297	51	DIP SW label	DRW1669	
	7	• • • • •		52	DOC label B	DRW1685	
	8	Flexible cord (32P)	DDD1096	53	65 label	ORW1069	
	9	Ground terminal	DKE-102	54	Caution label	ORW1129	
△	10	Inlet assy 3P	DKN1128	55	Caution label	PRW1018	
	11	Connector assy 3P	DKP3111	56	Caution label (G)	VRW-329	
	12	EMI gasket	ZTA-UC300287	57	Caution label	VRW1094	
	13	Screw	BPZ30P080FCC	58	Trans. label	VRW1105	
NSP	14	Stay	DND1064	59	Screw	BBZ30P060FMC	
	15	Connector (2P)	PF02PP-B50	60	Screw	PMB40P080FMC	
	16	Connector (2P)	PF02PP2C25	61	Screw	BBT30P060FNI	
	17	Connector (3P)	PF03PP-B40	62	Screw	PMZ30P100FNI	
	18	Connector (4P)	PF04PP-B37	63	Screw	CBZ30P080FZK	
	19	Connector (6P)	PF06PP-B60	64	Screw	DBA1083	
	20	Connector (9P)	PF09PP-C32	65	Screw	PMA30P060FMC	
	21	Joint cap	DEB1057	66	Screw	BBZ40P060FMC	
	22	PCB fixing base	DEC1231	67	Edge guard	DEC1409	
	23	Rivet	DEC1405	NSP 68	Fuse caution label	RRW-111	
	24	Protector sheet	DEC1601				
	25	Insulation sheet	DEC1786				
	26	Chassis	DNA1186				
	27	Rear panel	DNC1401				
	28	Sub stay	DND1176				
	29	Main stay	DND1177				
	30	PW stay	DND1179				
	31	Bonnet	DNE1304				
	32	PWS bracket	DNF1506				
	33	Heat sink	DNG1065				
	34	PWS shaft	DNH2071				
	35	Sub rear panel	DNH2073				
	36	PSW cap	DNK2413				
	37	Rubber foot	OEB1015				
	38	Tape (G)	REH1010				
	39	Cord stopper	RNH-184				
	40	Earth stay	DND1178				
	41	Shaft bracket	DNF1507				
	42	PSW bush	DNK1326				
	43	Shaft holder	DNK2414				
	44	Power button spring	DBH1213				
	45	EJ bracket	DNF1508				



2.4 MECHANISM SECTION



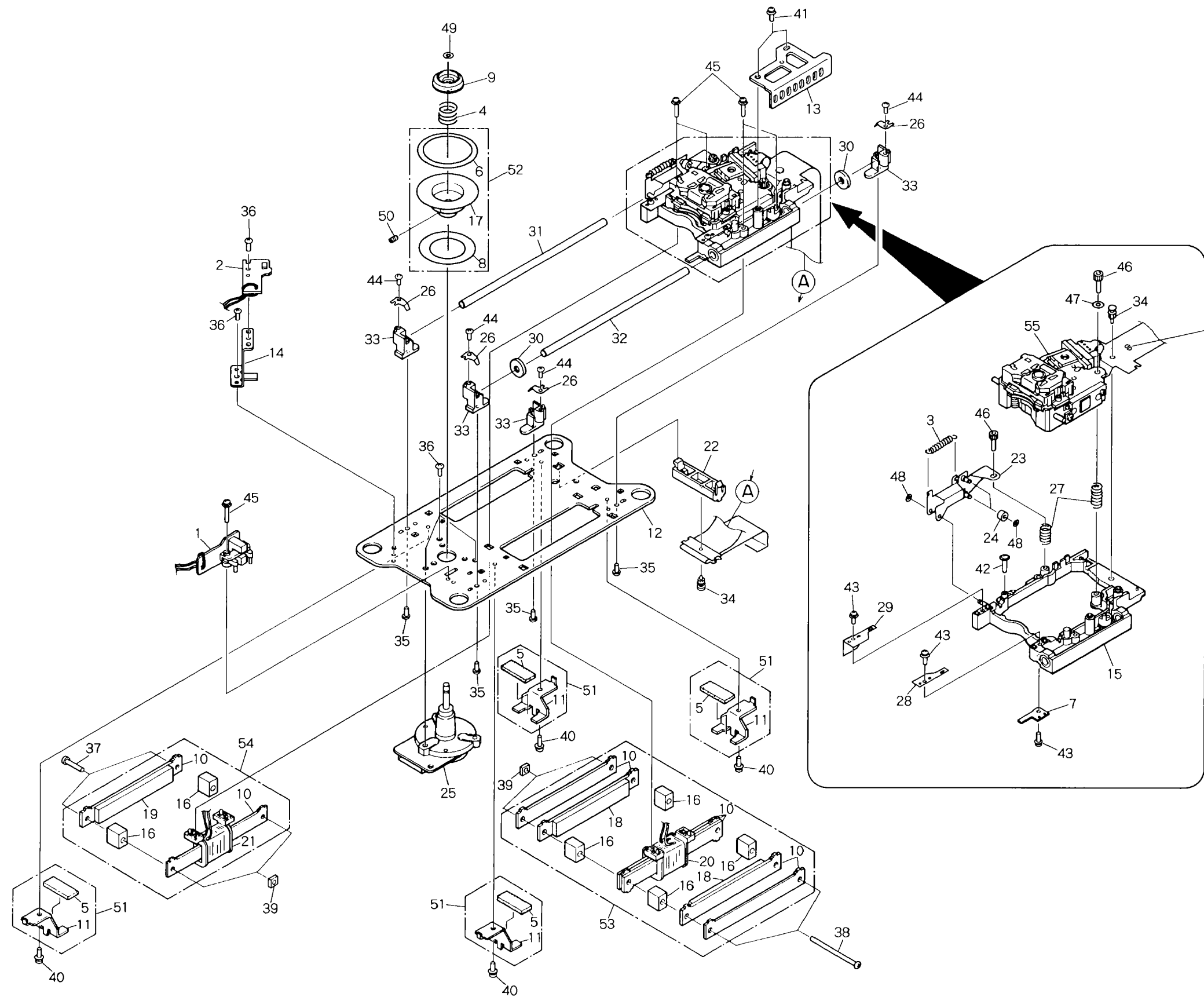
Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	HAMP unit	DWX1616		41	Clamper holder	DNK3175
	2	CNTB unit	DWX1618		42	Lever switch (S1005)	DSK1003
	3	DRIVE unit	DWX1552	NSP	43	Clamp cushion assy	DXB1557
	4	LDSB unit	DWX1619		44	Motor fixing screw	PBA - 125
	5	Solenoid	DXP1043		45	Steel ball ϕ 4	PBP - 001
	6	Servo mechanism assy	DXB1530	NSP	46	C magnet	PMF1017
	7	Float screw	DBA1072	NSP	47	Worm	PNW1220
	8	LP spring	DBH1280		48	Worm wheel	PNW1221
	9	LA spring	DBH1281		49	Clutch	PNW1223
	10	Float spring	DBH1282		50	Screw	BMZ26P040FMC
NSP	11	Float rubber	DEB1306	NSP	51	Yoke	RNE1627
	12	Locking wire saddle	DEC1305		52	Screw	DBA1089
	13	Rivet	DEC1877		53	Slide cam spring	DBH1316
	14	LP shaft	DLA1651		54	Slide base	DNH2069
	15	Guide bar	DLA1707		55	Disc plate	DNK3169
NSP	16	Motor pulley	PLB - 283		56	Tray	DNK3173
	17	P base	DNH1985		57	Slide cam	PNW1217
	18	Lock plate B	DNH1986		58	Synchro. lever unit	PNW1218
	19	Lock arm	DNK3051	NSP	59	PC support (B)	VEC1244
	20	Slide guide	DNK3187		60	Screw	PMH26P060FMC
	21	Mechanism base assy	DXB1565		61	Washer	WT16D032D025
NSP	22	Wire spring	PBH1025		62	Washer	WT21D050D025
	23	Earth plate	PBK1031		63	Screw	BBZ30P060FMC
	24	Wire unit	PBL1001		64	Screw	PDZ30P060FCC
NSP	25	Earth lead unit	DDX1154		65	Screw	BBZ26P060FMC
	26	Stopper rubber	PEB1035		66	Cord stopper	RNH - 184
	27	Belt	PEB1037		67	Screw	BPZ30P080FCC
NSP	28	L cushion	PEB1221		68	Screw	IPZ30P060FMC
NSP	29	Holder	PNB1051		69	Screw	JFZ26P025FBK
NSP	30	Loading base	PNB1139		70	Screw	PMZ20P080FMC
	31	Slider unit	PNW1210		71	Washer	WT26D047D025
	32	Gear pulley	PNW1211		72	Washer	IPZ20P050FMC
	33	Drive pulley	PNW1212		73	Connector (2P)	PF02EY - C32
	34	Pulley	PNW1213		74	Connector (2P)	PF02EY4C37
	35	L guide	PNW1214		75	Connector assy (11P)	DKP3112
NSP	36	DC motor/0.75W	PXM1010		76	Connector assy (5P)	DKP3113
	37	Clamp base	DNH2130		77	Loading motor assy - S	DXX2291
	38	Motor holder	DNH2072		78	Clamp motor assy - S	DXX2292
	39	Clamp cam	DNK3170		79	Clamper assy - S	DXX2290
	40	Clamp drive plate	DNK3174		80	Connector assy (3P)	DKP3111
					81	Connector (3P)	PF03PP - B40
					82	Connector (4P)	PF04PP - B37

2.5 SERVO MECHANISM ASSY

Parts List

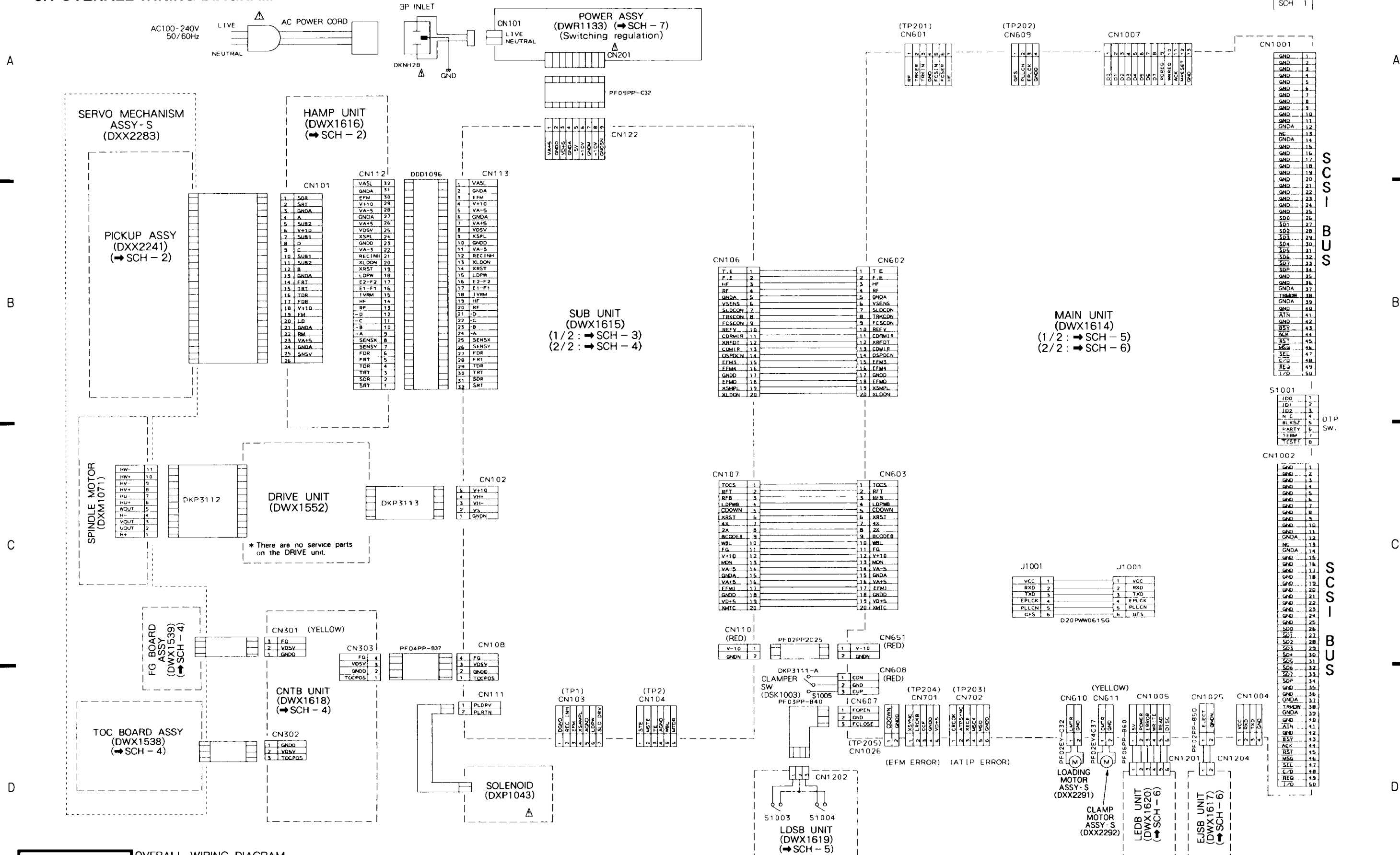
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	TOC board assy	DWX1538		51	Yoke angle assy	DXX2237
	2	FG board assy	DWX1539		52	Disc table assy	DXX2238
	3	Roller holder spring (SUS)	ABH7023		53	Linear motor assy	DXX2239
	4	Centering spring	DBH1242		54	Sensor assy	DXX2240
NSP	5	Cushion	DEB1302		55	Pickup assy	DXX2241
	6	Table sheet	DEC1484				
	7	Shading plate	DEC1825				
NSP	8	Reflection sheet	DEC1826				
	9	Centering hab	DLA1644				
NSP	10	Yoke	DNH1974				
NSP	11	Yoke angle	DNH1975				
NSP	12	Mechanism base	DNH1976				
NSP	13	Lock plate	DNH1980				
NSP	14	FG angle	DNH2012				
	15	Carriage unit	DNS1174				
NSP	16	Yoke holder	DNS1175				
NSP	17	Disc table	DNS1176				
NSP	18	Motor magnet	DNS1177				
NSP	19	Sensor magnet	DNS1178				
NSP	20	Motor bobbin	DNV1025				
NSP	21	Sensor bobbin	DNV1026				
	22	Flexible holder	DNV1027				
NSP	23	TAN arm unit	DXB1527				
	24	Bearing	DXB1531				
	25	Spindle motor	DXM1071				
	26	Shaft holder spring	PBH1136				
	27	Skew spring	PBH1155				
	28	Plate spring S	PBK1122				
	29	Plate spring L	PBK1123				
	30	Stopper rubber	PEB1035				
	31	Guide bar	PLA1026				
	32	Guide shaft	PLA1120				
NSP	33	Shaft holder	PNR1038				
	34	Nylon rivet	DEC1830				
	35	Screw	BMZ20P040FZK				
	36	Screw	BMZ26P040FMC				
	37	Screw	BMZ30P160FMC				
	38	Screw	BMZ30P350FMC				
	39	Nut	NZ30FMC				
	40	Screw	PMA26P040FMC				
	41	Screw	PMB20P050FMC				
	42	Screw	PMF20P050FMC				
	43	Screw	PMH20P040FMC				
	44	Screw	PMH20P050FZK				
	45	Screw	PMH20P100FMC				
	46	Screw	SMZ30H080FNI				
	47	Washer	WC30FMC				
	48	Washer	WT17D034D050				
	49	Washer	WT26D047D025				
	50	Screw	ZMD26H040FBT				



When removing the pickup assy, This portion is sure to short-circuit with the solder. Remove the solder after the pickup assy is installed.

3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3.1 OVERALL WIRING DIAGRAM



SCH-1 OVERALL WIRING DIAGRAM

NOTE FOR SCHEMATIC DIAGRAMS

(Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:

Unit: k: k Ω , M: M Ω , or Ω unless otherwise noted.

Rated power: 1/4W, 1/5W, 1/8W, 1/10W unless otherwise noted.

Tolerance: (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$, (M): $\pm 20\%$ or $\pm 5\%$ unless otherwise noted.

4. CAPACITORS:

Unit: p: pF or μ F unless otherwise noted.Ratings: capacitor (μ F) / voltage (V) unless otherwise noted.

Rated voltage: 50V except for electrolytic capacitors.

5. COILS:

Unit: m: mH or μ H unless otherwise noted.

6. VOLTAGE AND CURRENT:

 or \leftarrow V:

DC voltage (V) in PLAY mode unless otherwise noted.

 \rightarrow mA or \leftarrow mA:

DC current in PLAY mode unless otherwise noted.

Value in () is DC current in STOP mode.

7. OTHERS:

• or : Adjusting point.

• : Measurement point.

• The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH - ON THE SCHEMATIC DIAGRAM:

• SCH- indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position):

OUT OF UNIT

S1005 : CLAMP

MAIN UNIT

S1001-1 : ID0

S1001-2 : ID1

S1001-3 : ID2

S1001-4 : MTCS

S1001-5 : BLKSZ(2048/512)

S1001-6 : PARITY

S1001-7 : TERMINATOR

S1001-8 : TEST1

LDSB UNIT

S1003 :

S1004 :] LOADING POSITION SWITCH

EJSB UNIT

S1002 : OPEN/CLOSE()

POWER ASSY

SW101 : POWER ON/OFF

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.

2. A comparison between the main parts of PCB and schematic diagrams is shown below.

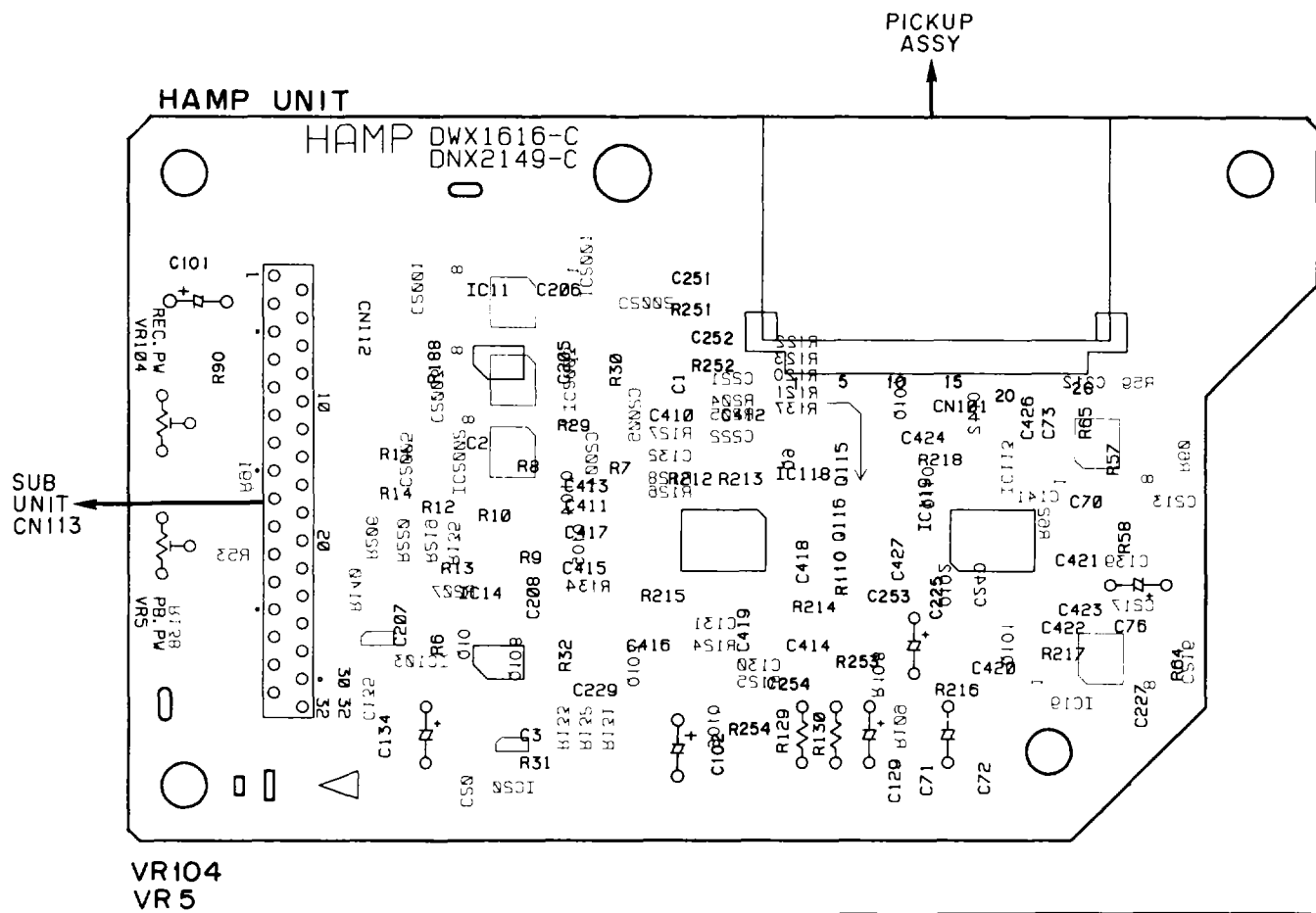
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3.2 HAMP UNIT AND PICKUP ASSY

A

A

PCB - 1



B

C

IC11 OSOI
IC14 8010 - 8010 IC118
8010 010 8010
80001 - 10001

80 7010
Q11501010118
Q116 8010 1010

(DNP1686 - C)

- This is a multi-layer PCB.
But information for both sides is shown.

D

D

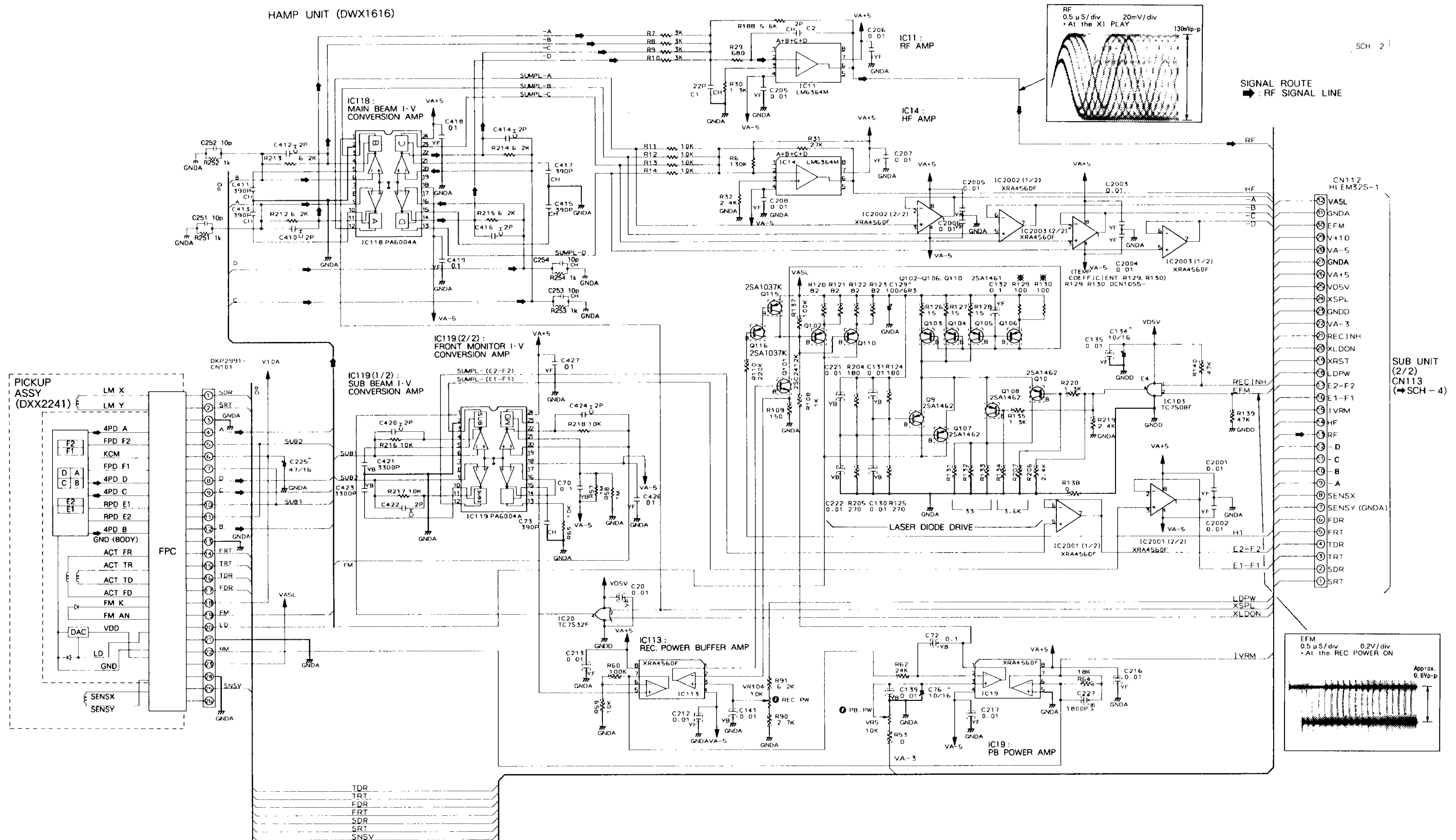
HAMP UNIT (DWX1616)

A

B

C

D



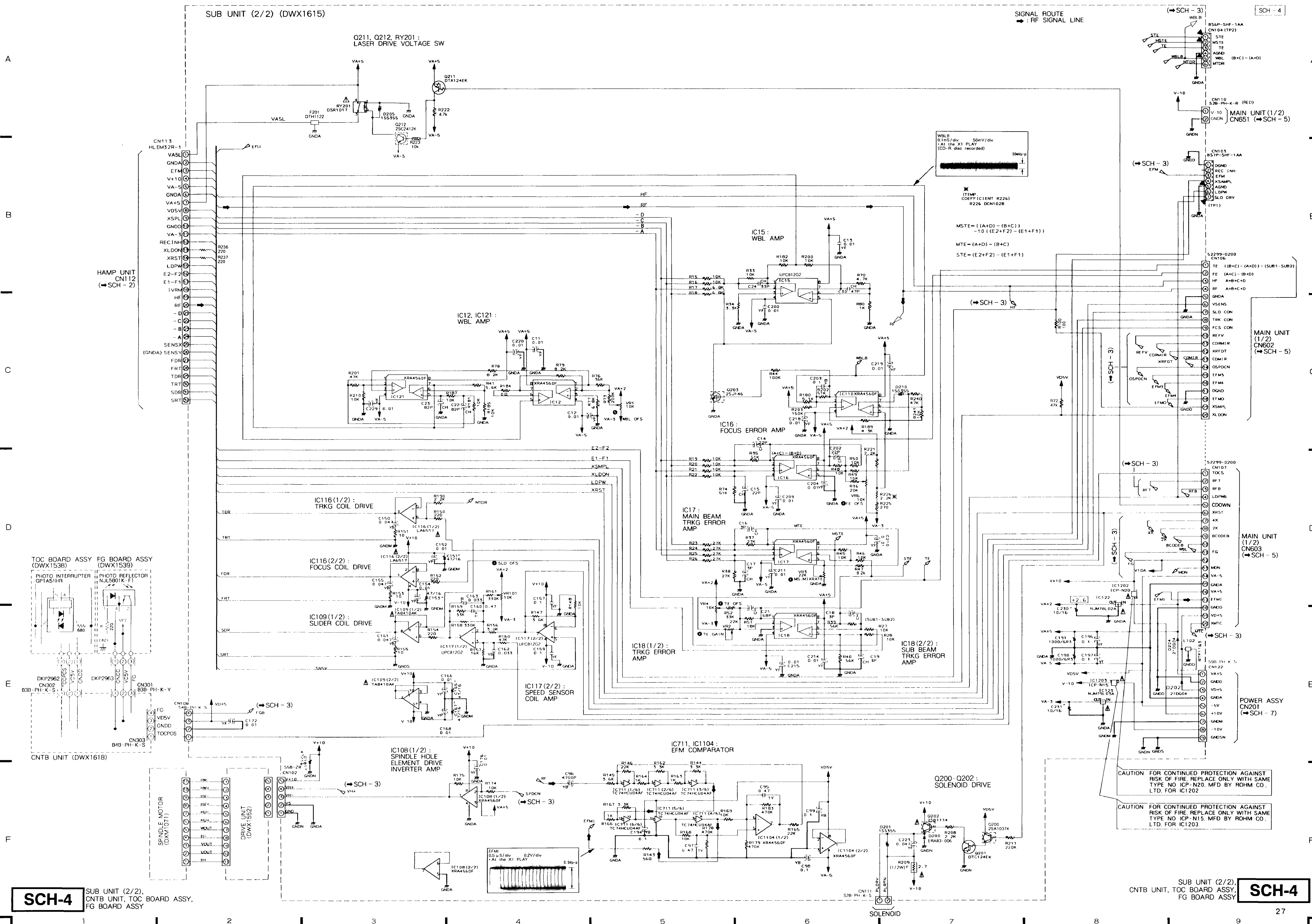
SCH-2

HAMP UNIT,
PICKUP ASSYHAMP UNIT,
PICKUP ASSY

SCH-2



3.4 SUB UNIT (2/2), CNTB UNIT, TOC AND FG BOARD ASSEMBLIES



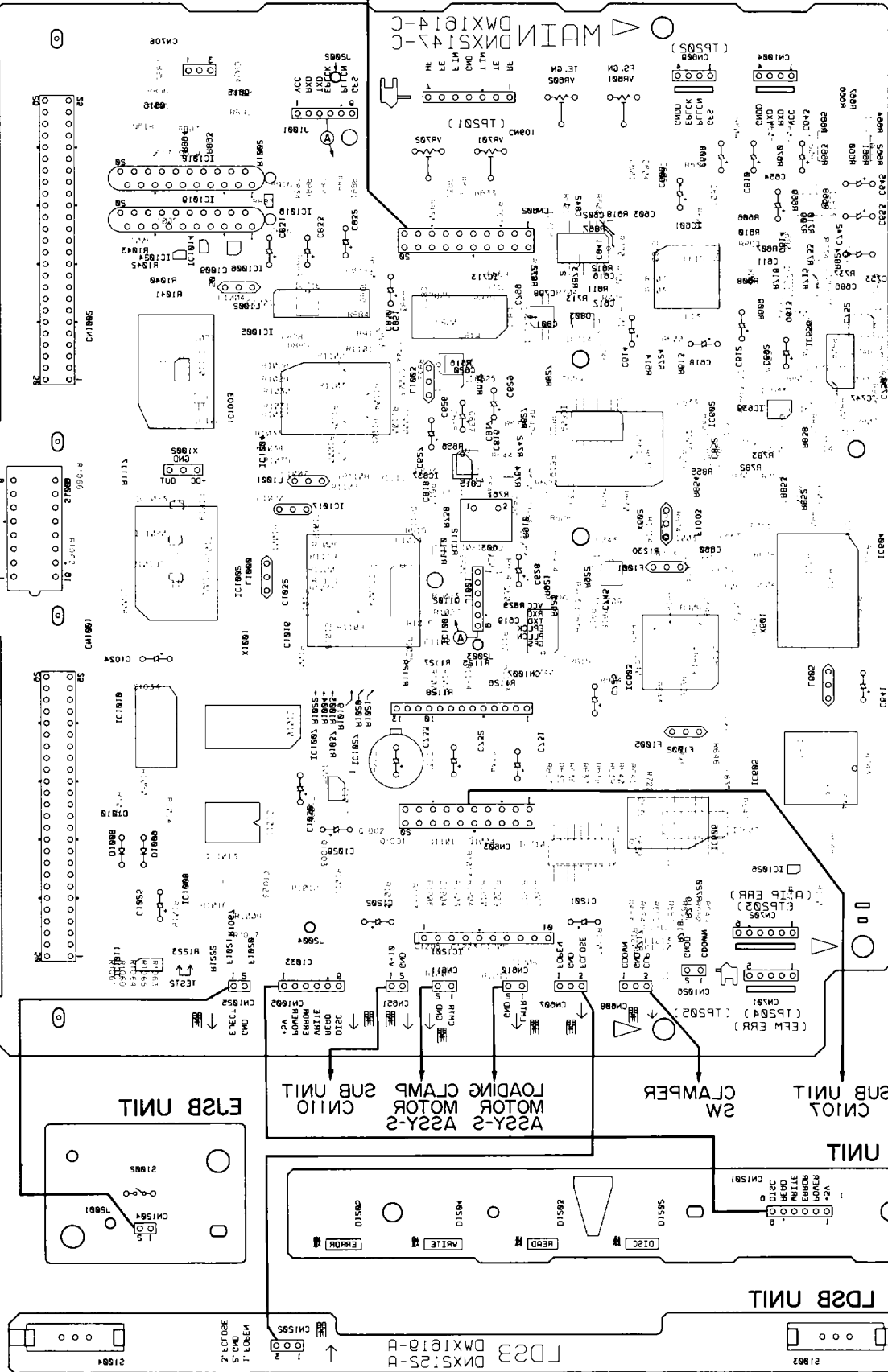


- 31

PCB - 3

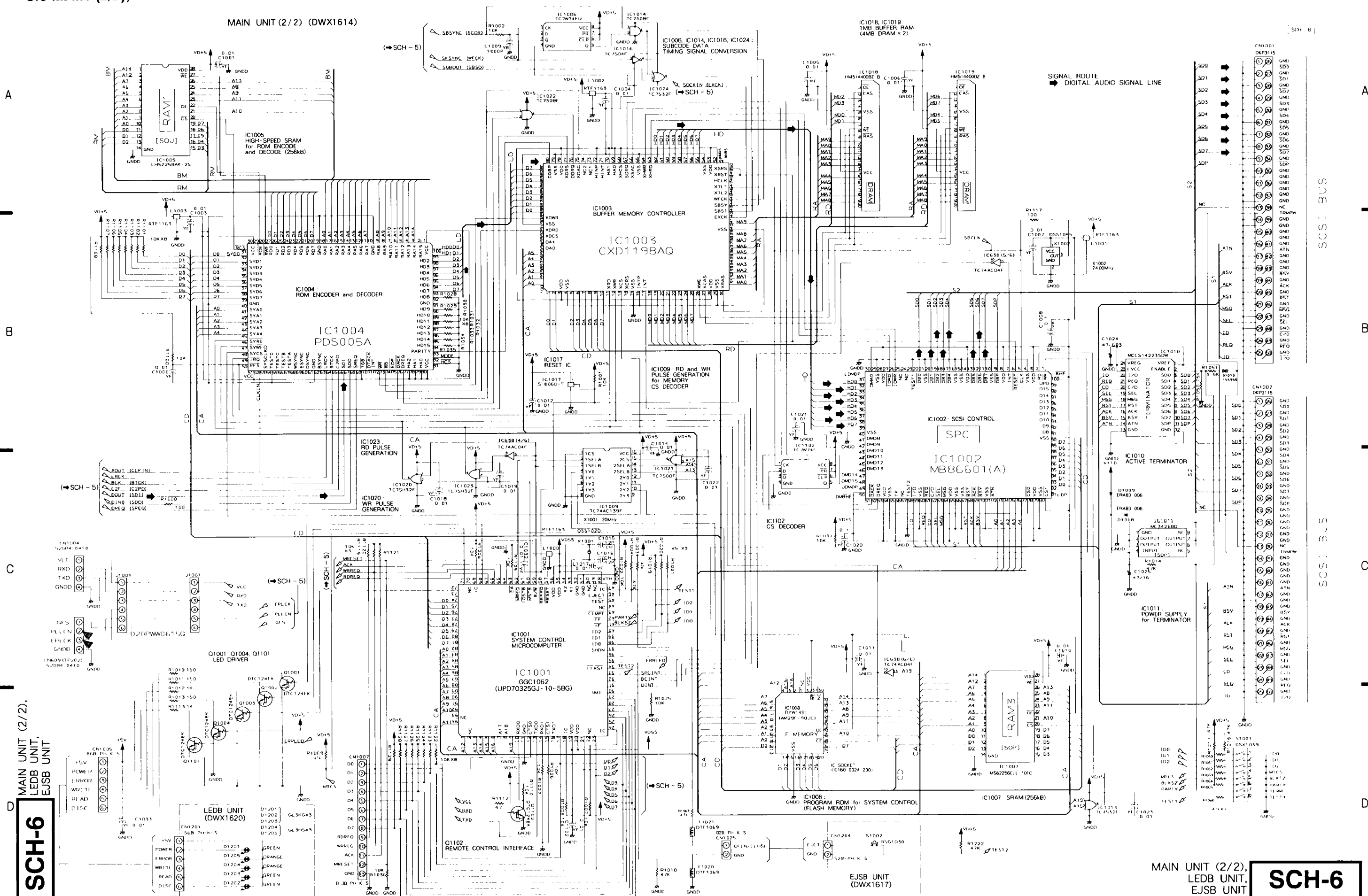
SUB UNIT

MAIN UNIT



IC1001	Q105	IC1002	Q106	IC1003	Q107	IC1004	Q108	IC1005	Q109	IC1006	Q110	IC1007	Q111	IC1008	Q112	IC1009	Q113	IC1010	Q114	IC1011	Q115	IC1012	Q116	IC1013	Q117	IC1014	Q118	IC1015	Q119	IC1016	Q120	IC1017	Q121	IC1018	Q122	IC1019	Q123	IC1020	Q124	IC1021	Q125	IC1022	Q126	IC1023	Q127	IC1024	Q128	IC1025	Q129	IC1026	Q130	IC1027	Q131	IC1028	Q132	IC1029	Q133	IC1030	Q134	IC1031	Q135	IC1032	Q136	IC1033	Q137	IC1034	Q138	IC1035	Q139	IC1036	Q140	IC1037	Q141	IC1038	Q142	IC1039	Q143	IC1040	Q144	IC1041	Q145	IC1042	Q146	IC1043	Q147	IC1044	Q148	IC1045	Q149	IC1046	Q150	IC1047	Q151	IC1048	Q152	IC1049	Q153	IC1050	Q154	IC1051	Q155	IC1052	Q156	IC1053	Q157	IC1054	Q158	IC1055	Q159	IC1056	Q160	IC1057	Q161	IC1058	Q162	IC1059	Q163	IC1060	Q164	IC1061	Q165	IC1062	Q166	IC1063	Q167	IC1064	Q168	IC1065	Q169	IC1066	Q170	IC1067	Q171	IC1068	Q172	IC1069	Q173	IC1070	Q174	IC1071	Q175	IC1072	Q176	IC1073	Q177	IC1074	Q178	IC1075	Q179	IC1076	Q180	IC1077	Q181	IC1078	Q182	IC1079	Q183	IC1080	Q184	IC1081	Q185	IC1082	Q186	IC1083	Q187	IC1084	Q188	IC1085	Q189	IC1086	Q190	IC1087	Q191	IC1088	Q192	IC1089	Q193	IC1090	Q194	IC1091	Q195	IC1092	Q196	IC1093	Q197	IC1094	Q198	IC1095	Q199	IC1096	Q200	IC1097	Q201	IC1098	Q202	IC1099	Q203	IC1100	Q204	IC1101	Q205	IC1102	Q206	IC1103	Q207	IC1104	Q208	IC1105	Q209	IC1106	Q210	IC1107	Q211	IC1108	Q212	IC1109	Q213	IC1110	Q214	IC1111	Q215	IC1112	Q216	IC1113	Q217	IC1114	Q218	IC1115	Q219	IC1116	Q220	IC1117	Q221	IC1118	Q222	IC1119	Q223	IC1120	Q224	IC1121	Q225	IC1122	Q226	IC1123	Q227	IC1124	Q228	IC1125	Q229	IC1126	Q230	IC1127	Q231	IC1128	Q232	IC1129	Q233	IC1130	Q234	IC1131	Q235	IC1132	Q236	IC1133	Q237	IC1134	Q238	IC1135	Q239	IC1136	Q240	IC1137	Q241	IC1138	Q242	IC1139	Q243	IC1140	Q244	IC1141	Q245	IC1142	Q246	IC1143	Q247	IC1144	Q248	IC1145	Q249	IC1146	Q250	IC1147	Q251	IC1148	Q252	IC1149	Q253	IC1150	Q254	IC1151	Q255	IC1152	Q256	IC1153	Q257	IC1154	Q258	IC1155	Q259	IC1156	Q260	IC1157	Q261	IC1158	Q262	IC1159	Q263	IC1160	Q264	IC1161	Q265	IC1162	Q266	IC1163	Q267	IC1164	Q268	IC1165	Q269	IC1166	Q270	IC1167	Q271	IC1168	Q272	IC1169	Q273	IC1170	Q274	IC1171	Q275	IC1172	Q276	IC1173	Q277	IC1174	Q278	IC1175	Q279	IC1176	Q280	IC1177	Q281	IC1178	Q282	IC1179	Q283	IC1180	Q284	IC1181	Q285	IC1182	Q286	IC1183	Q287	IC1184	Q288	IC1185	Q289	IC1186	Q290	IC1187	Q291	IC1188	Q292	IC1189	Q293	IC1190	Q294	IC1191	Q295	IC1192	Q296	IC1193	Q297	IC1194	Q298	IC1195	Q299	IC1196	Q300	IC1197	Q301	IC1198	Q302	IC1199	Q303	IC1200	Q304	IC1201	Q305	IC1202	Q306	IC1203	Q307	IC1204	Q308	IC1205	Q309	IC1206	Q310	IC1207	Q311	IC1208	Q312	IC1209	Q313	IC1210	Q314	IC1211	Q315	IC1212	Q316	IC1213	Q317	IC1214	Q318	IC1215	Q319	IC1216	Q320	IC1217	Q321	IC1218	Q322	IC1219	Q323	IC1220	Q324	IC1221	Q325	IC1222	Q326	IC1223	Q327	IC1224	Q328	IC1225	Q329	IC1226	Q330	IC1227	Q331	IC1228	Q332	IC1229	Q333	IC1230	Q334	IC1231	Q335	IC1232	Q336	IC1233	Q337	IC1234	Q338	IC1235	Q339	IC1236	Q340	IC1237	Q341	IC1238	Q342	IC1239	Q343	IC1240	Q344	IC1241	Q345	IC1242	Q346	IC1243	Q347	IC1244	Q348	IC1245	Q349	IC1246	Q350	IC1247	Q351	IC1248	Q352	IC1249	Q353	IC1250	Q354	IC1251	Q355	IC1252	Q356	IC1253	Q357	IC1254	Q358	IC1255	Q359	IC1256	Q360	IC1257	Q361	IC1258	Q362	IC1259	Q363	IC1260	Q364	IC1261	Q365	IC1262	Q366	IC1263	Q367	IC1264	Q368	IC1265	Q369	IC1266	Q370	IC1267	Q371	IC1268	Q372	IC1269	Q373	IC1270	Q374	IC1271	Q375	IC1272	Q376	IC1273	Q377	IC1274	Q378	IC1275	Q379	IC1276	Q380	IC1277	Q381	IC1278	Q382	IC1279	Q383	IC1280	Q384	IC1281	Q385	IC1282	Q386	IC1283	Q387	IC1284	Q388	IC1285	Q389	IC1286	Q390	IC1287	Q391	IC1288	Q392	IC1289	Q393	IC1290	Q394	IC1291	Q395	IC1292	Q396	IC1293	Q397	IC1294	Q398	IC1295	Q399	IC1296	Q400	IC1297	Q401	IC1298	Q402	IC1299	Q403	IC1300	Q404	IC1301	Q405	IC1302	Q406	IC1303	Q407	IC1304	Q408	IC1305	Q409	IC1306	Q410	IC1307	Q411	IC1308	Q412	IC1309	Q413	IC1310	Q414	IC1311	Q415	IC1312	Q416	IC1313	Q417	IC1314	Q418	IC1315	Q419	IC1316	Q420	IC1317	Q421	IC1318	Q422	IC1319	Q423	IC1320	Q424	IC1321	Q425	IC1322	Q426	IC1323	Q427	IC1324	Q428	IC1325	Q429	IC1326	Q430	IC1327	Q431	IC1328	Q432	IC1329	Q433	IC1330	Q434	IC1331	Q435	IC1332	Q436	IC1333	Q437	IC1334	Q438	IC1335	Q439	IC1336	Q440	IC1337	Q441	IC1338	Q442	IC1339	Q443	IC1340	Q444	IC1341	Q445	IC1342	Q446	IC1343	Q447	IC1344	Q448	IC1345	Q449	IC1346	Q450	IC1347	Q451	IC1348	Q452	IC1349	Q453	IC1350	Q454	IC1351	Q455	IC1352	Q456	IC1353	Q457	IC1354	Q458	IC1355	Q459	IC1356	Q460	IC1357	Q461	IC1358	Q462	IC1359	Q463	IC1360	Q464	IC1361	Q465	IC1362	Q466	IC1363	Q467	IC1364	Q468	IC1365	Q469	IC1366	Q470	IC1367	Q471	IC1368	Q472	IC1369	Q473	IC1370	Q474	IC1371	Q475	IC1372	Q476	IC1373	Q477	IC1374	Q478	IC1375	Q479	IC1376	Q480	IC1377	Q481	IC1378	Q482	IC1379	Q483	IC1380	Q484	IC1381	Q485	IC1382	Q486	IC1383	Q487	IC1384	Q488	IC1385	Q489	IC1386	Q490	IC1387	Q491	IC1388	Q492	IC1389	Q493	IC1390	Q494	IC1391	Q495	IC1392	Q496	IC1393	Q497	IC1394	Q498	IC1395	Q499	IC1396	Q500	IC1397	Q501	IC1398	Q502	IC1399	Q503	IC1400	Q504	IC1401	Q505	IC1402	Q506	IC1403	Q507	IC1404	Q508	IC1405	Q509	IC1406	Q510	IC1407	Q511	IC1408	Q512	IC1409	Q513	IC1410	Q514	IC1411	Q515	IC1412	Q516	IC1413	Q517	IC1414	Q518	IC1415	Q519	IC1416	Q520	IC1417	Q521	IC1418	Q522	IC1419	Q523	IC1420	Q524	IC1421	Q525	IC1422	Q526	IC1423	Q527	IC1424	Q528	IC1425	Q529	IC1426	Q530	IC1427	Q531	IC1428	Q532	IC1429	Q533	IC1430	Q534	IC1431	Q535	IC1432	Q536	IC1433	Q537	IC1434	Q538	IC1435	Q539	IC1436	Q540	IC1437	Q541	IC1438	Q542	IC1439	Q543	IC1440	Q544	IC1441	Q545	IC1442	Q546	IC1443	Q547	IC1444	Q548	IC1445	Q549	IC1446	Q550	IC1447	Q551	IC1448	Q552	IC1449	Q553	IC1450	Q554	IC1451	Q555	IC1452	Q556	IC1453	Q557	IC1454	Q558	IC1455	Q559	IC1456	Q560	IC1457	Q561	IC1458	Q562	IC1459	Q563	IC1460	Q564	IC1461	Q565	IC1462	Q566	IC1463	Q567	IC1464	Q568	IC1465	Q569	IC1466	Q570	IC1467	Q571	IC1468	Q572	IC1469	Q573	IC1470	Q574	IC1471	Q575	IC1472	Q576	IC1473	Q577	IC1474	Q578	IC1475	Q579	IC1476	Q580	IC1477	Q581	IC1478	Q582	IC1479	Q583	IC1480	Q584	IC1481	Q585	IC1482	Q586	IC1483	Q587	IC1484	Q588	IC1485	Q589	IC1486	Q590	IC1487	Q591	IC1488	Q592	IC1489	Q593	IC1490	Q594	IC1491	Q595	IC1492	Q596	IC1493	Q597	IC1494	Q598	IC1495	Q599	IC1496	Q600	IC1497	Q601	IC1498	Q602	IC1499	Q603	IC1500	Q604	IC1501	Q605	IC1502	Q606	IC1503	Q607	IC1504	Q608	IC1505	Q609	IC1506	Q610	IC1507	Q611	IC1508	Q612	IC1509	Q613	IC1510	Q614	IC1511	Q615	IC1512	Q616	IC1513	Q617	IC1514	Q618	IC1515	Q619	IC1516	Q620	IC1517	Q621	IC1518	Q622	IC1519	Q623	IC1520	Q624	IC1521	Q625	IC1522	Q626	IC1523	Q627	IC1524	Q628	IC1525	Q629	IC1526	Q630	IC1527	Q631	IC1528	Q632	IC1529	Q633	IC1530	Q634	IC1531	Q635	IC1532	Q636	IC1533	Q637	IC1534	Q638	IC1535	Q639	IC1536	Q640	IC1537	Q641	IC1538	Q642	IC1539	Q643	IC1540	Q644	IC1541	Q645	IC1542	Q646	IC1543	Q647	IC1544	Q648	IC1545	Q649	IC1546	Q650	IC1547	Q651	IC1548	Q652	IC1549	Q653	IC1550	Q654	IC1551	Q655	IC1552	Q656	IC1553	Q657	IC1554	Q658	IC1555	Q659	IC1556	Q660	IC1557	Q661	IC1558	Q662	IC1559	Q663	IC1560	Q664	IC1561	Q665	IC1562	Q666	IC1563	Q667	IC1564	Q668	IC1565	Q669	IC1566	Q670	IC1567	Q671	IC1568	Q672	IC1569	Q673	IC1570	Q674	IC1571	Q675	IC1572	Q676	IC1573	Q677	IC1574	Q678	IC1575	Q679	IC1576	Q680	IC1577	Q681	IC1578	Q682	IC1579	Q683	IC1580	Q684	IC1581	Q685	IC1582	Q686	IC1583	Q687	IC1584	Q688	IC1585	Q689	IC1586	Q690	IC1587	Q691	IC1588	Q692	IC1589	Q693	IC1590	Q694	IC1591	Q695	IC1592	Q696	IC1593	Q697	IC1594	Q698	IC1595	Q699	IC1596	Q700	IC1597	Q701	IC1598	Q702	IC1599	Q703	IC1600	Q704	IC1601	Q705	IC1602	Q706	IC1603	Q707	IC1604	Q708	IC1605	Q709	IC1606	Q710	IC1607	Q711	IC1608	Q712	IC1609	Q713	IC1610	Q714	IC1611	Q715
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3.6 MAIN (2/2), LEDB AND EJSB UNITS



3.7 POWER ASSY

A

SCH - 7

A

B

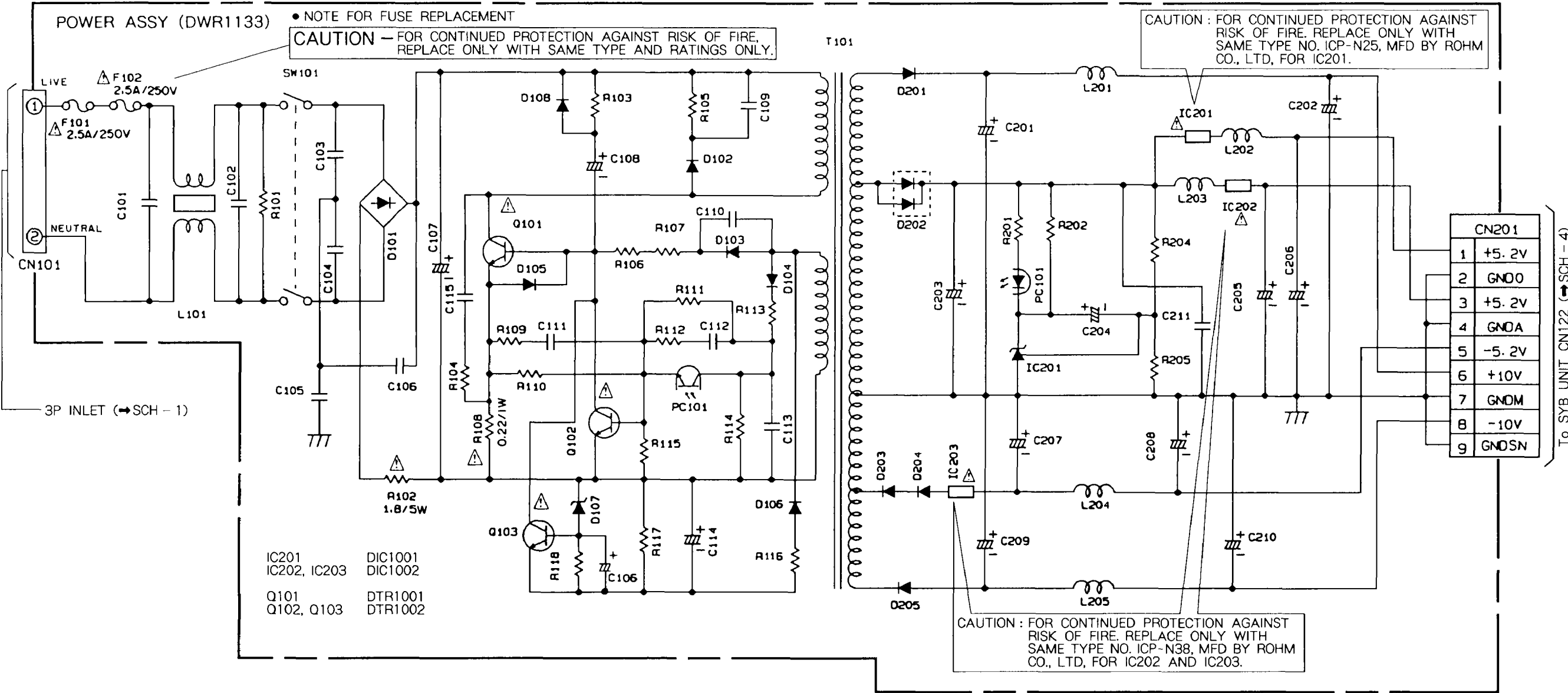
B

C

C

D

D



RESISTORS: 1/6W UNLESS OTHERWISE NOTED

ELECT. CAPACITORS $\frac{\square}{\square}$: 50V UNLESS OTHERWISE NOTED

OTHER CAPACITORS $\frac{\square}{\square}$: 100V UNLESS OTHERWISE NOTED

SCH-7

POWER ASSY

POWER ASSY

SCH-7

4. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
 Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).
 $560\ \Omega \rightarrow 56 \times 10^1 \rightarrow 561$ RD1/8PM $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix} J$
 $47k\ \Omega \rightarrow 47 \times 10^3 \rightarrow 473$ RD1/4PS $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix} J$
 $0.5\ \Omega \rightarrow 0R5$ RN2H $\begin{bmatrix} 0 & R & 5 \end{bmatrix} K$
 $1\ \Omega \rightarrow 010$ RS1P $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix} K$
 Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).
 $5.62k\ \Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ RN1/4PC $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix} F$

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP	MOTH UNIT		DWM1503
	└ MAIN UNIT		DWX1614
	└ SUB UNIT		DWX1615
	└ HAMP UNIT		DWX1616
	└ EJSB UNIT		DWX1617
	└ CNTB UNIT		DWX1618
	└ LDSB UNIT		DWX1619
	└ LEDB UNIT		DWX1620
Δ	POWER ASSY		DWR1133
	DRIVE UNIT		DWX1552
	SERVO MECHANISM ASSY		DXB1530
	└ TOC BOARD ASSY		DWX1538
	└ FG BOARD ASSY		DWX1539

MAIN UNIT

SEMICONDUCTORS

IC601	CXA1372AQ
IC1003	CXD1198AQ
IC1008	DYW1431
IC605	DYW1432
IC1018, IC1019	HM514400BZ-8
IC606	LH5116NA-10
IC1005	LH52258AK-25
IC1002	MB86601
IC1011	MC34268D
IC1010	MCCS142235DW
IC1007	MS62256CLL-10FC
IC604	PDJ006A
IC602	PDS004B
IC1004	PDS005A
IC1017	S-806D
Δ IC1201	TA7256P
IC638	TC74AC04F
IC1009	TC74AC139F
IC607, IC710	TC74AC573F
IC608	TC74HC4051AF

Mark	No.	Description	Part No.
	IC609, IC636, IC712		TC74HC4053AF
	IC1021		TC7S00F
	IC1016		TC7S04F
	IC1014, IC1022, IC1026		TC7S08F
	IC1013, IC1024, IC634		TC7S32F
	IC1020, IC1023		TC7SH32F
	IC1102		TC7W74F
	IC1006		TC7W74FU
	IC1001(UPD70325GJ-10-5BG)		GGC1062
	IC603(UPD78355GC-7EA)		GGC1077
	IC611, IC613-IC615, IC621		XRA4560F
	IC632, IC633, IC635, IC637, IC639		XRA4560F
	IC709		XRA4560F
	Q601, Q613		2SC2412K
	Q603, Q614, Q622		DTA124EK
	Q1001-Q1004, Q1101, Q1102, Q604		DTC124EK
	D1010, D604-D606, D803		1SS355
	D1008, D1009		ERA83-006
	D611		KV1420

COILS AND FILTERS

F1003-F1005, F1020, F1021	DTF1069
F1002	DTH1122
F1001	DTH1172
L603(1 μ H)	DTL1012
L1000-L1003, L605	RTF1163

SWITCH

S1001	DSX1039
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CAPACITORS

C619, C638, C639	CCSQCH100D50
C1015, C1016	CCSQCH120J50
C748, C761	CCSQCH271J50
C739, C851, C852	CCSQCH470J50
C637, C644	CCSQCH820J50
C610	CEAL010M50
C1029, C606	CEAL100M16
C612	CEAL101M6R3
C692	CEAL2R2M50
C1025, C1201, C1202	CEAL470M16

Mark	No.	Description	Part No.
	C1024, C608, C614, C627, C641 C643, C645, C653, C654, C725 C753 C628 C626	CEAL470M6R3 CEAL470M6R3 CEALNP2R2M35 CEALNP3R3M25 CEALNP4R7M16	
	C733 C731, C732 C1009, C715, C744 C603, C611, C617, C622, C623 C663	CEAS102M6R3 CEAS471M6R3 CKSQYB102K50 CKSQYB103K50 CKSQYB103K50	
	C604, C605, C607, C609, C625 C690, C742, C760 C720 C749 C669	CKSQYB104K25 CKSQYB104K25 CKSQYB122K50 CKSQYB123K50 CKSQYB153K50	
	C727 C721 C686 C714, C716 C601	CKSQYB183K50 CKSQYB223K50 CKSQYB272K50 CKSQYB273K50 CKSQYB332K50	
	C602, C613, C719 C615, C616 C801 C1000, C1001, C1003-C1007 C1010-C1012, C1014, C1017-C1019	CKSQYB333K25 CKSQYB472K50 CKSQYB823K25 CKSQYF103Z50 CKSQYF103Z50	
	C1021-C1023, C1032, C1033, C1102 C1203-C1208, C624, C630 C634-C636, C642, C659, C661 C717, C718, C722, C723, C740 C743, C745, C747, C750-C752	CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50	
	C798, C799, C817, C818 C841, C842 C1008, C1020, C631, C633, C640 C689, C726, C734-C736, C741 C621	CKSQYF103Z50 CKSQYF103Z50 CKSQYF104Z25 CKSQYF104Z25 CKSQYF473Z50	
RESISTORS			
	VR601, VR602 Other Resistors	VRTB6VS103 RS1/10S□□□□	
OTHERS			
	CN1004, CN609 2mm PITCH BOTTOM CONNECTOR	52084-0410	
	CN701 2mm PITCH BOTTOM CONNECTOR	52084-0510	
	CN702 2mm PITCH BOTTOM CONNECTOR	52084-0610	
	CN602, CN603 DIN CONNECTOR	53229-0200	
	CN1007 KR CONNECTOR CN610 2P TOP POST(EH) CN1025 KR CONNECTOR CN1026 2P TOP POST CN607 KR CONNECTOR 3P	B13B-PH-K-S B2B-EH B2B-PH-K-S B2P-SHF-1AA B3B-PH-K-S	
	CN608 KR CONNECTOR CN1005 KR CONNECTOR CN1001, CN1002 L TYPE DIP CONNECTOR 50 EARTH METAL	B3B-PH-K-R B6B-PH-K-S DKP3115 DNF1446	
	X1002 CRYSTAL RESONATOR (24.00MHz)	DSS1055	
	X602 CRYSTAL RESONATOR (45.1584MHz) IC SOCKET (PLCC32P)	DSS1060 IC160-0324-230	

Mark	No.	Description	Part No.
		IC SOCKET (PLCC44P)	IC160-0444-230
	X1001	CERAMIC RESONATOR (20MHz)	OSS1020
	X601	CERAMIC RESONATOR (32MHz)	OSS1021

SUB UNIT**SEMICONDUCTORS**

△	IC1203	ICP-N15
△	IC1202	ICP-N20
△	IC116	LA6517
	IC616	M5238AFP
	IC617, IC619, IC629	NJM2903M
	IC624, IC626	NJM2904M
	IC622, IC623	NJM311M
△	IC122	NJM78L02A
△	IC123	NJM79L03A
△	IC109	TA8410AK
	IC610	TC4053BF
	IC707	TC74HC08AF
	IC702	TC74HC253AF
	IC706	TC74HC4075AF
	IC711	TC74HCU04AF
	IC117, IC15	UPC812G2
	IC108, IC110, IC1104, IC12, IC121	XRA4560F
	IC16-IC18, IC618, IC620, IC625	XRA4560F
	IC627, IC628, IC630, IC717	XRA4560F
	Q200, Q605, Q606, Q609, Q610	2SA1037K
△	Q202	2SB1114
	Q212, Q607, Q608, Q611, Q612	2SC2412K
	Q203	2SJ146
	Q211	DTA124EK
	Q201, Q630-Q632	DTC124EK
	D603, D609, D801, D802	1SS133X
	D201, D205, D210, D602	1SS355
	D202, D204	21DQ04
	D200	ERA83-006

COILS-FILTER

DL704	ACTIVE DELAY LINE	DTF1083
DL705	ACTIVE DELAY LINE	DTF1084
L102		RTF1163
F201		DTH1122

RELAY

△	RY201	DSR1017
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CAPACITORS

C16-C19	CCSQCH030C50
C710	CCSQCH101J50
C683, C684, C706-C709	CCSQCH151J50
C14, C15, C202	CCSQCH220J50
C835, C836, C839, C840	CCSQCH221J50
C24	CCSQCH330J50
C698, C699, C702, C703	CCSQCH331J50
C30	CCSQCH470J50
C21	CCSQCH680J50
C22, C23	CCSQCH820J50

Mark	No.	Description	Part No.
	C666, C678, C679 C230, C231 C691 C730 C151, C153, C165, C167, C181		CEAL010M50 CEAL100M16 CEAL220M16 CEAL2R2M50 CEAL470M16
	C647, C651, C656, C657, C675 C677, C680, C681, C695, C697 C711, C713 C646, C648 C190, C191		CEAL470M6R3 CEAL470M6R3 CEAL470M6R3 CEAL4R7M35 CEAS102M6R3
	C160, C95, C97 C655 C194, C203, C658, C672 C98, C99 C662, C670		CFTYA474J50 CKSQYB102K50 CKSQYB104K25 CKSQYB104K25 CKSQYB183K50
	C162, C163, C685 C649, C671, C96 C150, C155, C161 C802 C11-C13, C152, C154, C166		CKSQYB333K25 CKSQYB472K50 CKSQYB473K50 CKSQYB822K50 CKSQYF103Z50
	C168, C172, C176, C200, C204 C209-C211, C214, C215 C218-C220, C224, C229, C650 C652, C673, C674, C676 C687, C688, C800, C803		CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50 CKSQYF103Z50
	C811-C813 C157, C159, C196, C197, C682 C693 C223, C664, C665, C700, C701 C728, C729, C837, C838		CKSQYF103Z50 CKSQYF104Z25 CKSQYF104Z25 CKSQYF473Z50 CKSQYF473Z50

RESISTORS

	R226 (2.2k Ω)	DCN1028
Δ	R209	RD1/2PM2R7J
	VR1, VR101, VR4, VR6	VRTB6VS103
	VR2, VR3	VRTB6VS223
	Other Resistors	RS1/10S□□□J

OTHERS

CN106, CN107	DIN CONNECTOR	52299-0200
	EARTH METAL	DNF1446
CN113	32P FFC CONNECTOR	HLEM32R-1
CN111	KR CONNECTOR	S2B-PH-K-S
CN108	KR CONNECTOR	S4B-PH-K-S
CN122	KR CONNECTOR	S9B-PH-K-S

HAMP UNIT**SEMICONDUCTORS**

IC11, IC14	LM6364M
IC118, IC119	PA6004A
IC103	TC7S08F
IC20	TC7S32F
IC113, IC19, IC2001-IC2003	XRA4560F
Q115, Q116	2SA1037K
Q102-Q106, Q110	2SA1461
Q10, Q107, Q108, Q9	2SA1462
Q101	2SC2412K

Mark	No.	Description	Part No.
CAPACITORS			
	C2, C410, C412, C414, C416 C420, C422, C424 C251-C254 C1 C411, C413, C415, C417, C73		CCSQCH020C50 CCSQCH020C50 CCSQCH100D50 CCSQCH220J50 CCSQCH391J50
	C134, C76 C225 C129 C130, C131, C139, C141 C221, C222		CEAL100M16 CEAL470M16 CEAS101M6R3 CKSQYB103K50 CKSQYB103K50
	C70, C72, C418, C419, C426, C427 C227 C421, C423 C135, C20, C2001-C2006 C205-C208, C212, C213		CKSQYB104K25 CKSQYB182K50 CKSQYB332K50 CKSQYF103Z50 CKSQYF103Z50
	C216, C217 C132		CKSQYF103Z50 CKSQYF104Z25

RESISTORS

R129, R130 (100 Ω)	DCN1055
VR104, VR5	VRTB6HS103
Other Resistors	RS1/10S□□□J

OTHERS

	PCB BINDER	DEF1015
	EARTH METAL	DNF1446
CN112	32P FFC CONNECTOR	HLEM32S-1

EJSB UNIT**SWITCH**

S1002	RSG1030
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OTHERS

CN1204	KR CONNECTOR	S2B-PH-K-S
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CNTB UNIT**OTHERS**

CN302	KR CONNECTOR 3P	B3B-PH-K-S
CN301	KR CONNECTOR	B3B-PH-K-Y
CN303	KR CONNECTOR	B4B-PH-K-S

LDSB UNIT**SWITCHES**

S1003, S1004	PSH1005
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OTHERS

CN1202	KR CONNECTOR 3P	B3B-PH-K-S
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Mark	No.	Description	Part No.
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LEDB UNIT**SEMICONDUCTORS**

	D1204, D1205		GL3HS43
	D1201-D1203		GL3KG43

OTHERS

	CN1201	KR CONNECTOR	S6B-PH-K-S
--	--------	--------------	------------

POWER ASSY**SEMICONDUCTORS**

△	IC201	IC PROTECTOR(ICP-N25)	DIC1001
△	IC202, IC203	IC PROTECTOR(ICP-N38)	DIC1002
△	Q101	TRANSISTOR	DTR1001
△	Q102, Q103	TRANSISTOR	DTR1002

RESISTORS

△	R102	RESISTOR	DCN1029
△	R108	RESISTOR	DCN1030

OTHERS

△	F101	FUSE(2. 5A, 20mm)	DEK1056
△	F102	FUSE(2. 5A, 20mm)	DEK1057

DRIVE UNIT

DRIVE UNIT HAS NO SERVICE PART.

TOC BOARD ASSY**RESISTORS**

	RESISTOR	RD1/6PM681J
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OTHERS

	PHOTO INTERRUPTER	GP1A51HR
	BINDER	Z09-056

FG BOARD ASSY**RESISTORS**

	RESISTOR	RD1/6PM221J
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OTHERS

	PHOTO REFLECTOR	NJL5801K-F1
	BINDER	Z09-056

5. ADJUSTMENTS

• Adjustment and Check Items

Perform the adjustment of this model in the order as shown below.

1. VCO free-run frequency adjustment
2. Slider speed control offset adjustment
3. Playback power adjustment
4. Recording power adjustment
5. Focus offset adjustment
6. Main and Sub mix ratio adjustment
7. Tracking amp. gain adjustment
8. Tracking offset adjustment
9. Fine focus offset adjustment
10. Focus servo loop gain adjustment
11. Tracking servo loop gain adjustment
12. VCO free-run frequency verification
13. WBL offset adjustment

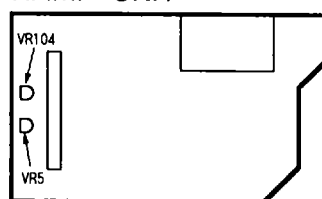
• Measuring Equipment

1. Dual trace oscilloscope (10:1 probe)
2. Laser power meter
3. Test disc (YEDS - 7)
4. CDR disc with recorded
(Type No. CD - R63, manufactured by TDK.)
5. Low-pass filter (39k Ω +1000pF)
6. High-pass filter (3.9k Ω +180pF)
7. Signal generator
8. Frequency counter (measurable over 10MHz)
9. Hexagonal screwdriver (1.5mm diagonal)
10. Other general tools

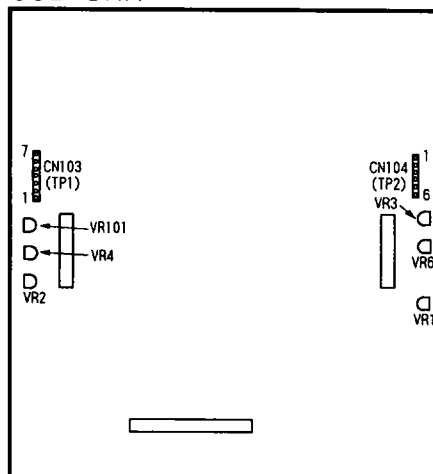
• Adjustment Points and Their Names

- VR1 : WBL offset (WBL. OFS)
 VR2 : Tracking amp gain (TE. GAIN)
 VR3 : Main and Sub mix ratio (MS. MIX)
 VR4 : Tracking offset (TE. OFS)
 VR5 : Playback power (PB. PW)
 VR6 : Focus offset (FE. OFS)
 VR101 : Slider speed control offset (SLD. OFS)
 VR104 : Recording power (REC. PW)
 VR601 : Focus servo loop gain (FCS. GAIN)
 VR602 : Tracking servo loop gain (TRK. GAIN)
 L603 : VCO adjustment (VCO ADJ)

HAMP UNIT



SUB UNIT



MAIN UNIT

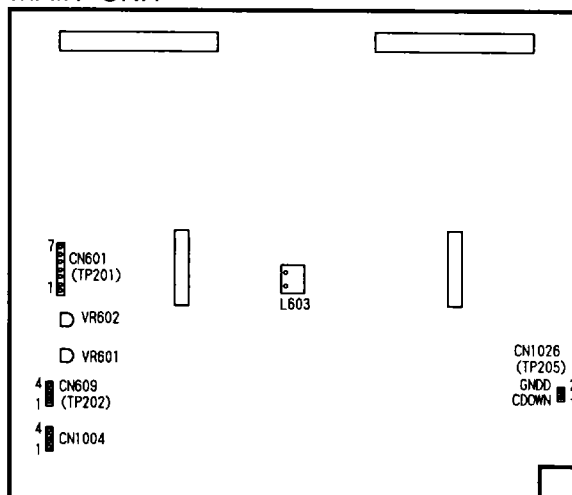


Fig.1 Adjustment point

5.1 Function Table of the Remote Controller (RU-V101) for Service

• Test mode

Shows the function table of the remote controller (RU-V101) for service as follows. When operating the CD-ROM writer directly, it is possible to operate as shown below by connecting the wired-remote control to the CD-ROM writer with the interface.

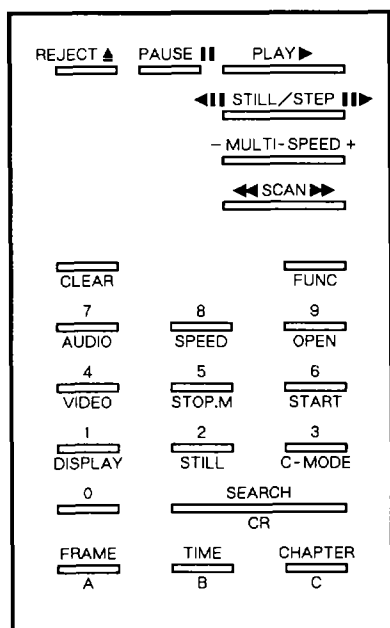


Fig. 3 RU-V101

• Schematic Diagram of the Conversion Jlg for Remote Control Operation

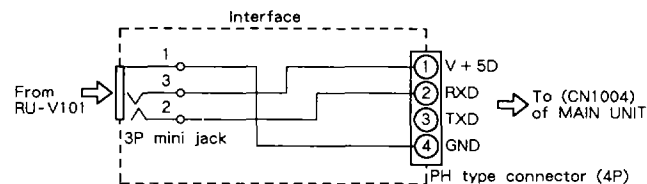


Fig. 2

5.2 How to Control the Remote Control Unit

Importance : When performing the adjustment, be sure to turn the power on after set to DIP SW (S1001), SW8, and SW1 to SW3. At this time, operation can not performed from the Host.

• Test command

key operation	Description
[REJECT]	STOP
[0]+[TIME]	All servo OFF
[1]+[TIME]	Laser diode (LD) ON
[2]+[TIME]	Focus ON
[3]+[TIME]	Spindle ON/tracking OFF
[4]+[TIME]	Tracking ON
[5]+[TIME]	MAX power ON entry
[6]+[TIME]	MAX power ON
[7]+[TIME]	Spindle rotation frequency : Normal speed
[8]+[TIME]	Spindle rotation frequency : Twofold speed
[9]+[TIME]	Spindle rotation frequency : Fourfold speed
[3]+[9]+[CHAPTER]	Read out area Recording
[4]+[0]+[CHAPTER]	Read in (TOC) area Recording
[3]+[4]+[CHAPTER]	TOC read
[4]+[2]+[CHAPTER]	Power calibration
[3]+[7]+[CHAPTER]	REC pause
[2]+[1]+[CHAPTER]	REC start
[4]+[1]+[CHAPTER]	PMA record
[5]+[3]+[CHAPTER]	Calibration power ON
[3]+[1]+[CHAPTER]	Tray open
[3]+[2]+[CHAPTER]	Tray close
[0]+[9]+[CHAPTER]	1Track jump : FWD
[1]+[0]+[CHAPTER]	1Track jump : RWD
[1]+[1]+[CHAPTER]	10Track jump : FWD
[1]+[2]+[CHAPTER]	10Track jump : RWD
[1]+[3]+[CHAPTER]	96Track jump : FWD
[1]+[4]+[CHAPTER]	96Track jump : RWD
[MIN]+[SEC]+[FRM]+[SEARCH]	TIME search
[TRACK NUMBER]+[FUNC]+[0]	Track number search

Caution :

- When replacing the disc, perform the TOC read. (However, does not perform the TOC read in the adjustment.)
- Perform the power calibration before first recording after the disc is replaced.
- Perform the PMA record after the recording.
- Perform the STOP when changing the spindle rotation frequency.
- Perform the power calibration before first recording after the spindle rotation frequency is changed.
- When finalizing the disc, be sure to perform the read out area recording and the read in area recording in order.

5.3 Adjustments

1. VCO Free-run Frequency Adjustment

● Objective	To optimize the VCO free-run frequency.		
● Symptom when out of adjustment	No play.		
● Measurement instrument connections	Connect the frequency counter and TP202 (CN609), pin 3 (EPLCK) [Settings]	● Player state ● Adjustment location ● Disc	Stop (just the power switch ON) L603 (VCO. ADJ) None needed
[Procedure] 1. Adjust L603 so that the VCO oscillation frequency at TP202 (CN609), pin 3 (EPLCK) is $4.322\text{MHz} \pm 0.00.2\text{MHz}$.			

2. Slider Speed Control Offset Adjustment

● Objective	To optimize the DC offset voltage of the slider speed control amp.		
● Symptom when out of adjustment	Player does not playback (slider moves at stop).		
● Measurement instrument connections	Connect the oscilloscope to TP1(CN103), Pin 7 (SLDDRV). GND : TP1 (CN103), Pin 5 (AGND) [This connection may be via a low-pass filter ($39\text{k}\Omega$ + 1000pF)] [Settings] 5 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Stop VR101 (SLD. OFS) None needed
[Procedure] 1. Move the pickup to midway across the disc. 2. If the pickup continues moving even when you try to stop it, coarse adjust VR101 (SLD.OFS) to stop it. 3. Adjust VR101 (SLD.OFS) so that the DC voltage at TP1 (CN103), pin 7 (SLDDRV) is $0 \pm 10\text{ mV}$. 4. Check that pickup movement is stopped.			

3. Playback Power Adjustment

● Objective	To optimize the playback power of the laser diode.		
● Symptom when out of adjustment	Play does not start, track search is impossible, track are skipped.		
● Measurement instrument connections	Shine the light discharged from the objective lens on the light power meter sensor. [Settings] Wavelength 790nm Average mode	● Player state ● Adjustment location ● Disc	Laser diode (LD) ON VR5 (PB. PW) None needed
[Procedure] 1. Open the disc tray. 2. Short-circuit the pins 1 and 2 of TP connector CN1026 (TP205). (Refer to fig. 1.) 3. Move the pickup to the position where shineable the light discharged from the objective lens on the light power meter sensor. 4. Lights up the playback laser diode by laser diode (LD) ON. 5. Shine the light discharged from the objective lens in the pickup on the light power meter sensor. Adjust VR5 (PB.PW) so that the playback laser diode output is an average $0.68 \text{ mW} \pm 0.02 \text{ mW}$. 6. Turn off the all servos, and release the short-circuit of TP connector CN1026 (TP205). Notes : Do not open the disc tray after the TP connector CN1026 (TP205) is short-circuited. The clamp motor will be locked. If the clamp motor is locked, refer to the "Note 1 : How to open the tray manually" in section 6. DISASSEMBLY (page 53).			

4. Recording Power Adjustment

● Objective	To optimize the recording power of the laser diode.		
● Symptom when out of adjustment	The player does not record nor playback self-recorded discs. It also skips tracks and the RF waveform is dirty. (No problems during CD playback)		
● Measurement instrument connections	Shine the light discharged from the objective lens on the light power meter sensor. [Settings] Wavelength 790 nm Average mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Fourfold speed, max power ON entry, max power ON VR104 (REC. PW) None needed
[Procedure] <ol style="list-style-type: none"> 1. Fully turn VR104 (REC.PW) counterclockwise to reduce the power to the minimum. 2. Open the disc tray. 3. Short-circuit the pins 1 and 2 of TP connector CN1026 (TP205). (Refer to fig. 1.) 4. Move the pickup to the position where shineable the light discharged from the objective lens on the light power meter sensor. 5. Spindle rotation frequency : Fourfold speed, max power ON entry and max power ON to lights up the laser diode. 6. Shine the light discharged from the objective lens in the pickup on the light power meter sensor and adjust VR104 (REC.PW) so that the playback laser diode output is an average of $10 \text{ mW} \pm 0.05 \text{ mW}$. 7. Turn off the all servos, and release the short-circuit of TP connector CN1026 (TP205). Notes <ul style="list-style-type: none"> • Power more than ten times greater than playback power is released during these adjustments. Never look directly at the objective lens. • The laser diode may be damaged if the recording power is greater than the specified value. Always perform step 1 before making adjustments. • Do not open the disc tray after the TP connector CN1026 (TP205) is short-circuited. The clamp motor will be locked. Be sure to perform the adjustment from step 1. If the clamp motor is locked, refer to the "Note 1 : How to open the tray manually" in section 6. DISASSEMBLY (page 53). 			

5. Focus Offset Adjustment

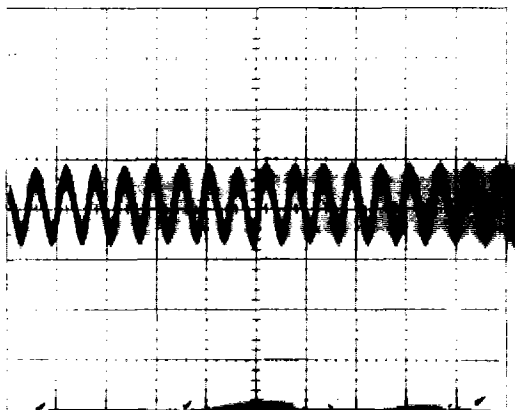
● Objective	To coarse adjust the DC offset voltage of the focus servo circuit for perform the tracking adjustments correctly.		
● Symptom when out of adjustment	The model does not focus in, sound broken and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 1 (RF) [Settings] 20mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/tracking OFF VR6 (FE. OFS) YEDS-7
[Procedure] <ol style="list-style-type: none"> 1. Move the pickup to midway across the disc (R=35mm). 2. In the normal speed, focus ON and spindle ON state, adjust VR6 (FE. OFS) so that the amplitude of TP201 (CN601), Pin 1 (RF) becomes maximam. 			

6. Main and Sub Mix Ratio Adjustment

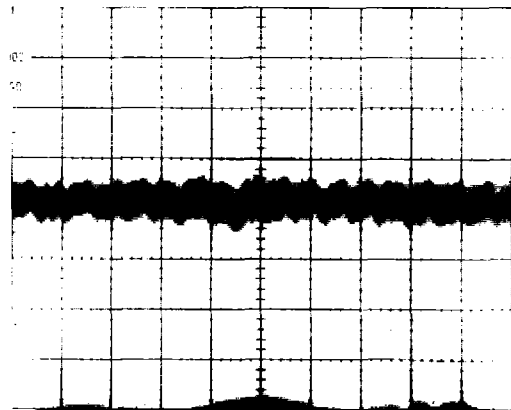
● Objective	To mix the gain of the main signal output and sub signal output of the pickup.		
● Symptom when out of adjustment	Player does not playback.		
● Measurement instrument connections	Connect the oscilloscope to CH1 : TP2 (CN104), Pin 1 (STE) CH2 : TP2 (CN104), Pin 2 (MSTE). [This connection may be via a L.P.F. (39k Ω +1000pF).] [Settings] CH 1 : 5 mV/div. AC mode 1 ms/div. ADD mode CH 2 : 10 mV/div. AC mode (Match the GND level of CH1 and CH2.)	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR3 (MS. MIX) YEDS-7

[Procedure]

1. Spindle rotation frequency : Normal speed, focus ON and spindle ON to move the pickup to midway across the disc.
2. Set the oscilloscope to ADD mode (waveform adding mode of CH1 and CH2) and observe the adding waveform of CH1 and CH2.
3. Adjust VR3 (MS. MIX) so that the amplitude of waveform becomes minimum.



Out of adjustment



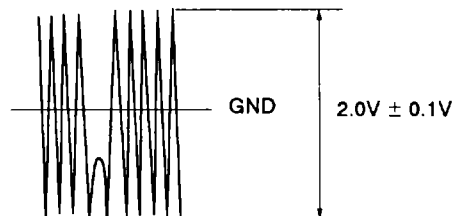
Optimum adjustment

7. Tracking Amp. Gain Adjustment

● Objective	To correct the discrepancy in the tracking error level with the pickup.		
● Symptom when out of adjustment	Player does not playback, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 2 (TE). [This connection may be via a low-pass filter (39k Ω + 1000pF).] [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/tracking OFF VR2 (TE. GAIN) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm).
2. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
3. Set to spindle rotation frequency : Normal speed, focus ON and spindle ON.
4. Adjust VR2 (TE. GAIN) so that the positive amplitude and negative amplitude of the tracking error signal at TP201 (CN601), Pin 2 (TE) is $2.0V \pm 0.1V$.



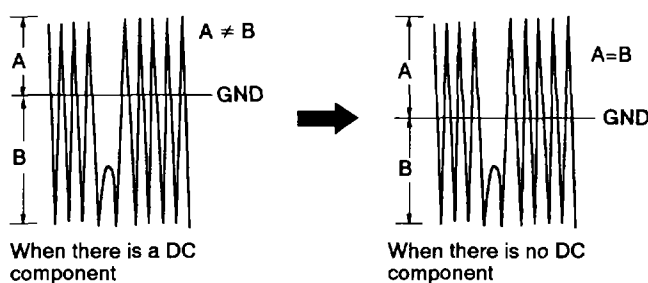
8. Tracking Offset Adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 2 (TE) [This connection may be via a low-pass filter (39k Ω +1000pF).] [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR4 (TE. OFS) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm).
2. Set to normal speed, focus ON and spindle ON.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR4 (TE. OFS) so that the positive amplitude and negative amplitude of the tracking error signal at TP201 (CN601), Pin 2 (TE) are the same (in other words, so that there is no DC component).

Note : Perform the run-on adjustment in the section 7 and 8.

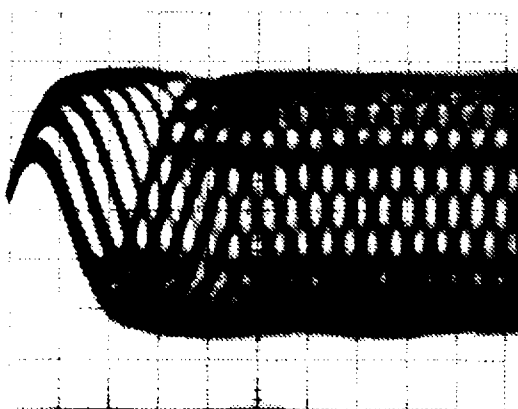


9. Fine Focus Offset Adjustment

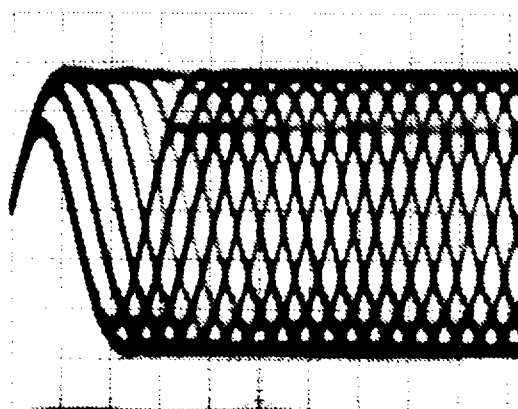
● Objective	To optimize the DC offset voltage of the focus servo circuit.		
● Symptom when out of adjustment	The player does not focus in, sound broken and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 1 (RF).	● Player state	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON
	[Settings] 20 mV/division 500 ns/division AC mode	● Adjustment location	VR6 (FE. OFS)
		● Disc	YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
2. Adjust VR6 (FE. OFS) so that the eye pattern of TP201 (CN601), Pin 1 (RF) (the diamond shape at the center of the RF signal) can be seen the most clearly.



Out of adjustment



Optimum adjustment

10. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See Fig. 8 [Settings] CH 1 : 0.1 V/division X - Y mode CH 2 : 20 mV/division	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR601 (FCS. GAIN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.44kHz and 2Vp-p.
2. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
3. Adjust VR601 (FCS. GAIN) so that the lissajous waveform is symmetrical about the X axis and the Y axis.

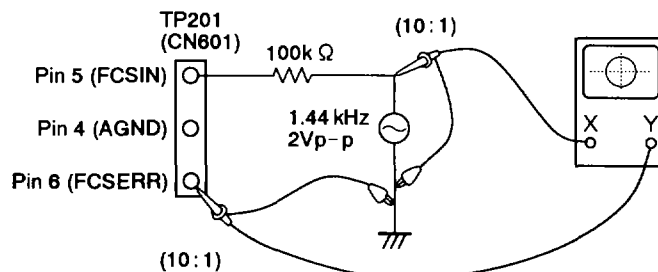
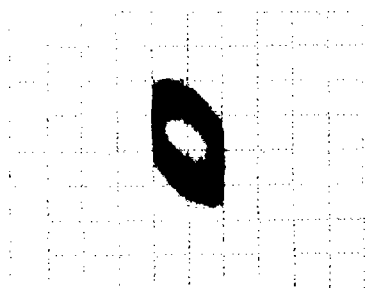
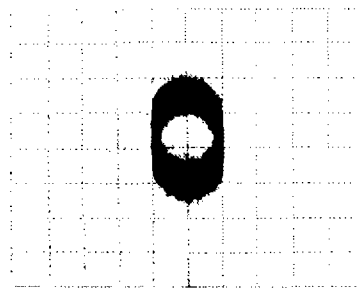


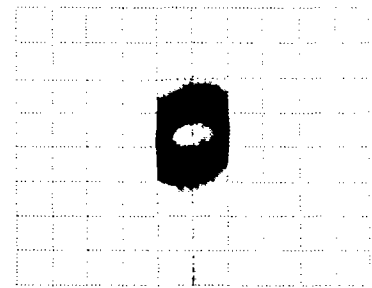
Fig. 8



Higher gain



Optimum gain



Lower gain

11. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Fig. 9.	● Player state	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON
	[Settings] CH 1 : 0.1 V/division X-Y mode CH 2 : 10 mV/division	● Adjustment location	VR602 (TRK. GAIN)
		● Disc	YEDS-7

[Procedure]

1. Set the AF generator output to 1.54kHz and 2Vp-p.
2. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
3. Adjust VR602 (TRK. GAIN) so that the lissajous waveform is symmetrical about the X axis and the Y axis.

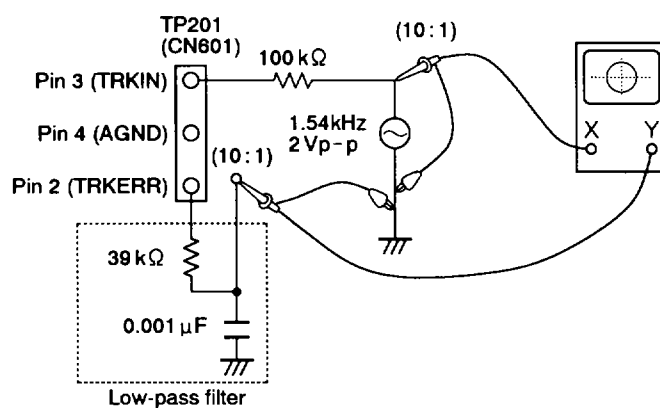
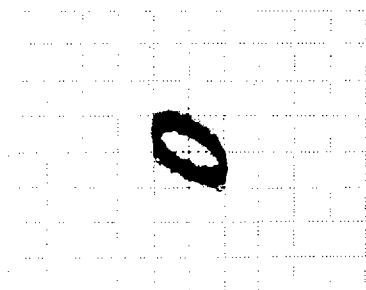
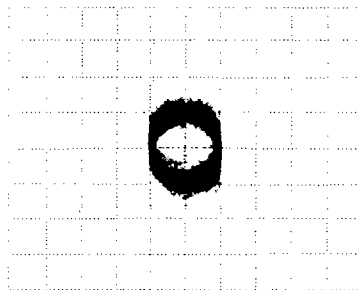


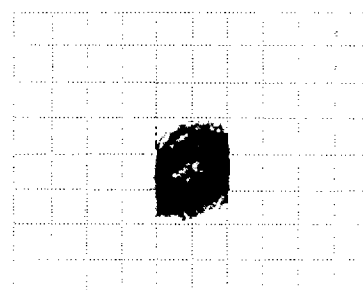
Fig. 9



Higher gain



Optimum gain



Lower gain

12. VCO free-run frequency verification

● Objective	To verify the VCO free-run frequency is optimized.		
● Symptom when out of adjustment	No play and track search is impossible.		
● Measurement instrument connections	Connect the foscilloscope to TP202 (CN609) , pin 2 (PLLCN) [Settings] 0.1 V/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed•Fourfold speed, focus ON, spindle ON/tracking ON L603 (VCO ADJ) YEDS-7
[Procedure] 1. In the normal speed, focus ON, spindle ON and tracking ON state, verify the center value (center value which is the thick portion of line) of waveform's DC elements at TP202 (CN609), pin 2 (PLLCN) is $0V \pm 0.1V$. 2. In the fourfold speed, focus ON, spindle ON and tracking ON state, verify the center value of waveform's DC elements at TP202 (CN609), pin 2 (PLLCN) is $0V \pm 0.1V$. 3. If the specified values cannot be obtained, perform the verification after adjusting the section "1. VCO free-run frequency adjustment" again.			

13. WBL Offset Adjustment

● Objective	To optimize the DC offset voltage of the wobble amp.		
● Symptom when out of adjustment	CD-R disc does not record and playback.		
● Measurement instrument connections	Connect the oscilloscope to TP2 (CN104), Pin 5 (WBL). [This connection may be via a high-pass filter (180pF+39.0k Ω).] [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR1 (WBL. OFS) CDR disc with recorded (Type No. CD-R63, manufactured by TDK.)
[Procedure] 1. Move the pickup to the midway across the disc. 2. Set to the normal speed, focus ON, spindle ON and tracking ON state. 3. Adjust VR1 (WBL. OFS) so that the amplitude of the waveform becomes minimum.			

6. DISASSEMBLY

• Disassembling the Front Panel (Fig. 1 and 2)

1. Remove the bonnet. (Remove three screws at rear and two screws at both sides.)
2. Press the OPEN/CLOSE (▲) button and pull out the tray. (Fig. 1)
(Refer to Note 1 when opening the tray manually.)
3. Remove the tray bezel. (Lifting up the tray bezel by pushing two hooks.) (Fig. 1)
4. Remove the lead wires from cord stopper. (Fig. 1)

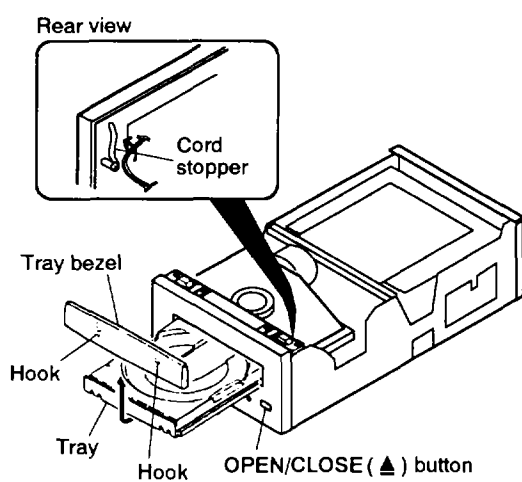


Fig. 1

5. Remove the two screws (A). Pushing the two hooks (B) and two hooks (C) and pull out the front panel. (Fig. 2)

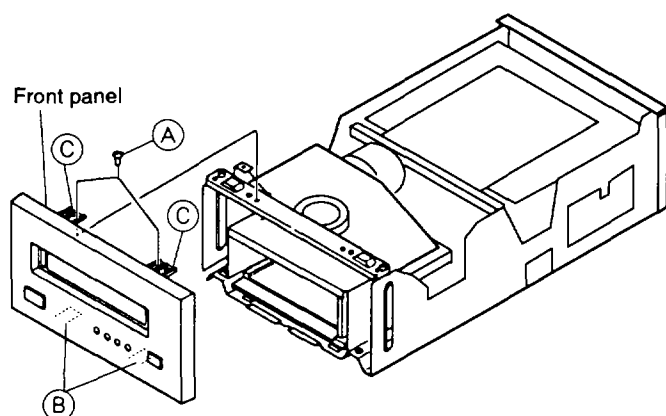


Fig. 2

Note 1 : How to open the tray manually (Fig. 3)

1. Loosen the screw (D) fixing the clamp motor.
2. Taking care not to drop the steel ball of the tip of the gear section of the clamp motor, remove the clamp motor and apart from the engaging section (E) of gear.
3. Turn the clamp cam counterclockwise to the position where the lever switch turns ON. (Set to the state that the clamp holder is raised.)
4. Mount the clamp motor again. (Drive the screw (D).)
5. Push the tray from behind to open it.

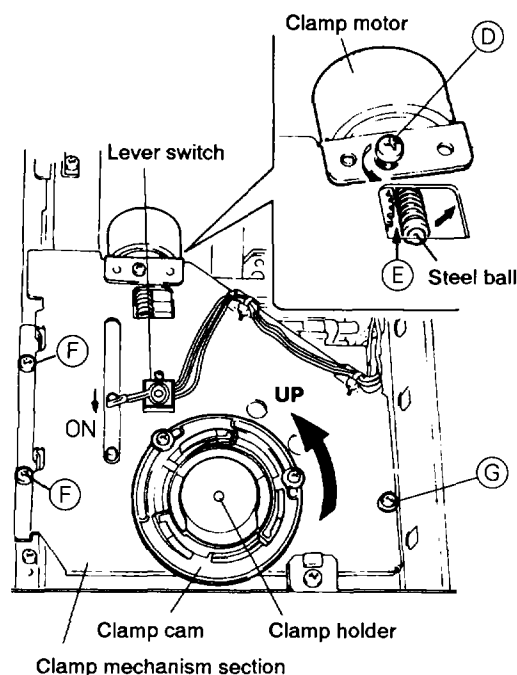


Fig. 3

• Disassembling the Tray Section (Fig. 3 and 4)

1. Remove the bonnet as in the step 1 of "Disassembling the Front Panel".
2. Remove the two screws (F) and a screw (G) fixing the clamp mechanism section and remove by turning over the clamp mechanism section. (Fig. 3)
3. Remove the two screws (H) and remove the slide base from the slider unit by pushing the hook (I). (Fig. 4)
4. Remove the tray section by drawing out from the front panel.

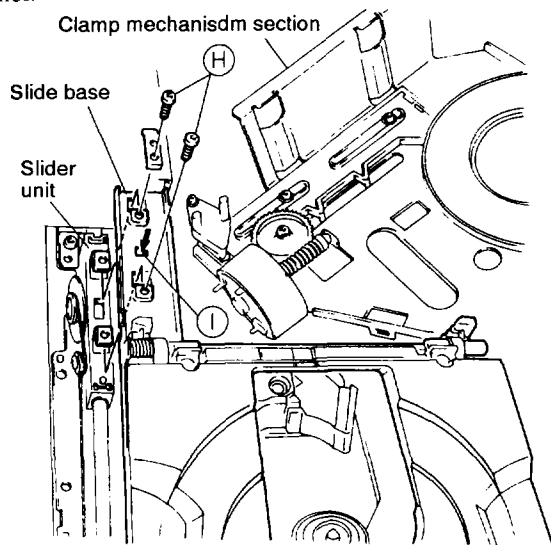


Fig. 4

• Disassembling the Servo Mechanism Assy (Fig. 5)

1. Remove the tray section. (Refer to "Disassembling the Tray Section".)
2. Remove the two screws (J) to remove the slide guide.
3. Remove the four screws (K) fixing the servo mechanism assy.
4. Remove wires from the locking wire saddle.
5. Remove the two connectors CN301 and CN302 on the CNTB unit.
6. Remove the flexible wire (*) CN101 on the HAMP unit and remove the servo mechanism assy.

* Note : When removing the flexible wire, (N) portion in the figure is sure to short-circuit with the solder (Fig. 5).
Remove the solder after the flexible wire is installed.

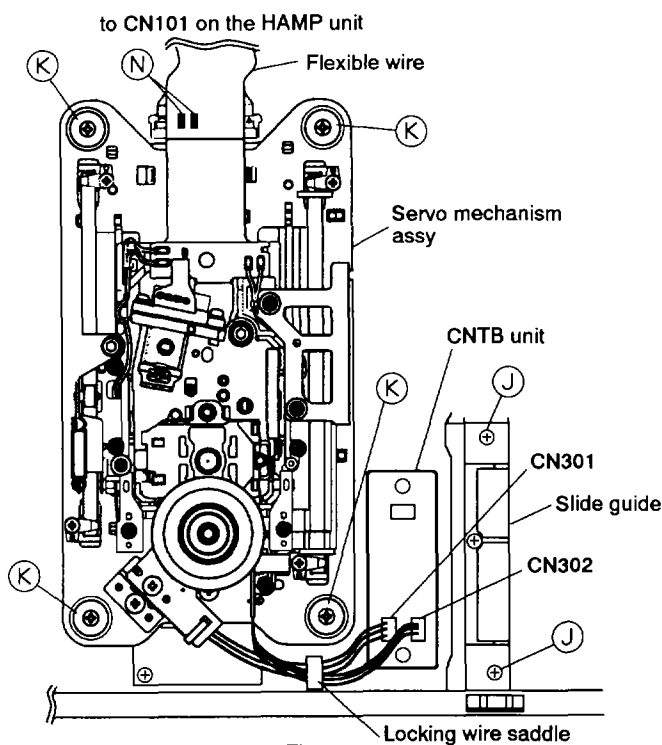


Fig. 5

• Disassembling the Loading Mechanism Section (Fig. 6)

1. Remove the tray section. (Refer to "Disassembling the Tray Section".)
2. Remove the two screws (L) fixing the loading mechanism section and the lead wires from cord stopper.
3. Remove the screw (M) fixing the earth lead unit.
4. Move the loading mechanism section backward a little and remove it by lifting up the end of front panel.

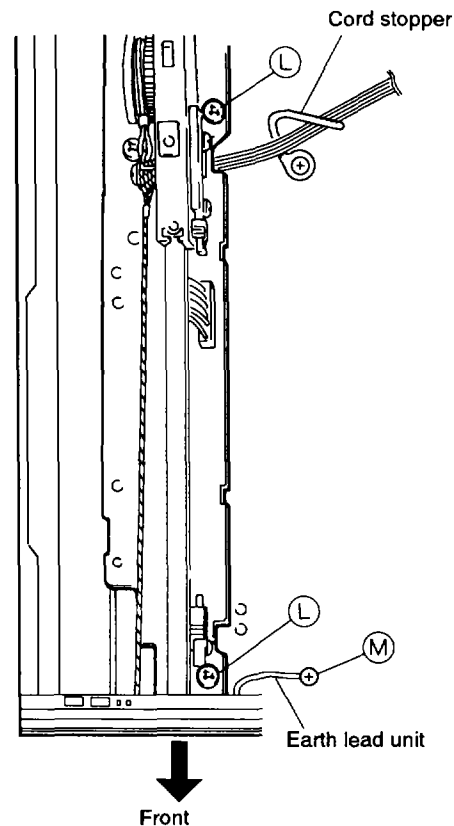


Fig. 6

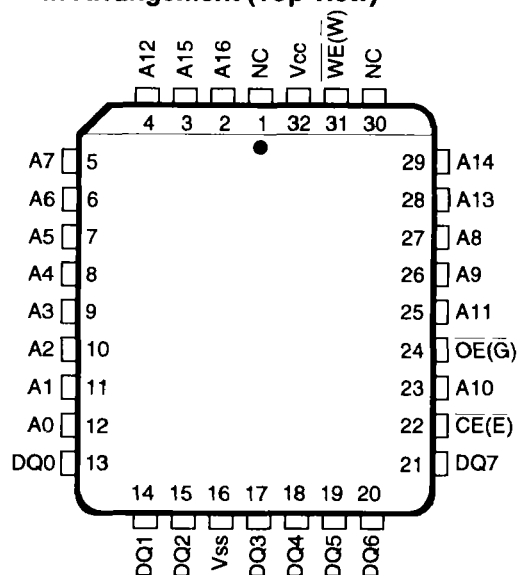
7. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

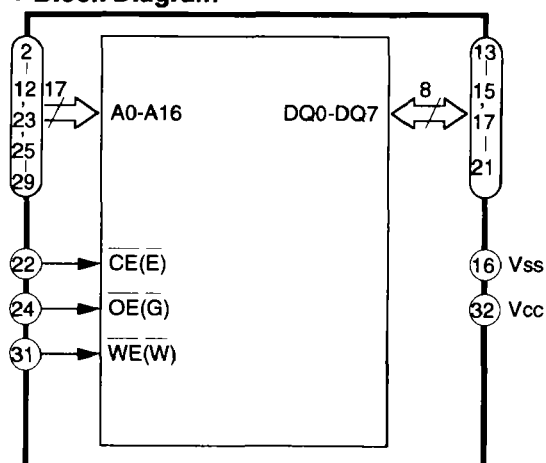
■ DYW1431 (MAIN UNIT : IC1008)

• FLASH MEMORY ROM

• Pin Arrangement (Top view)



• Block Diagram

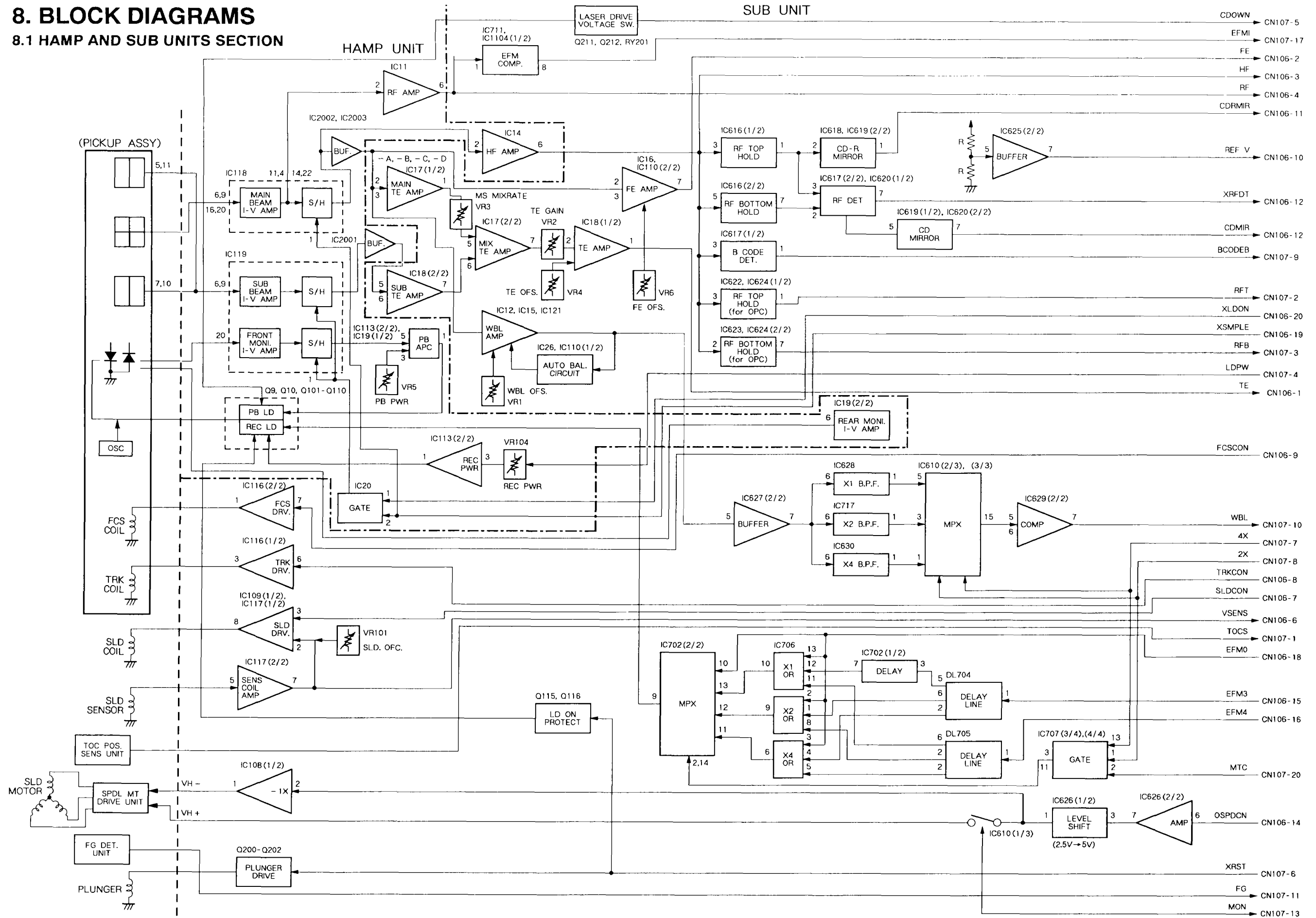


• Pin Function

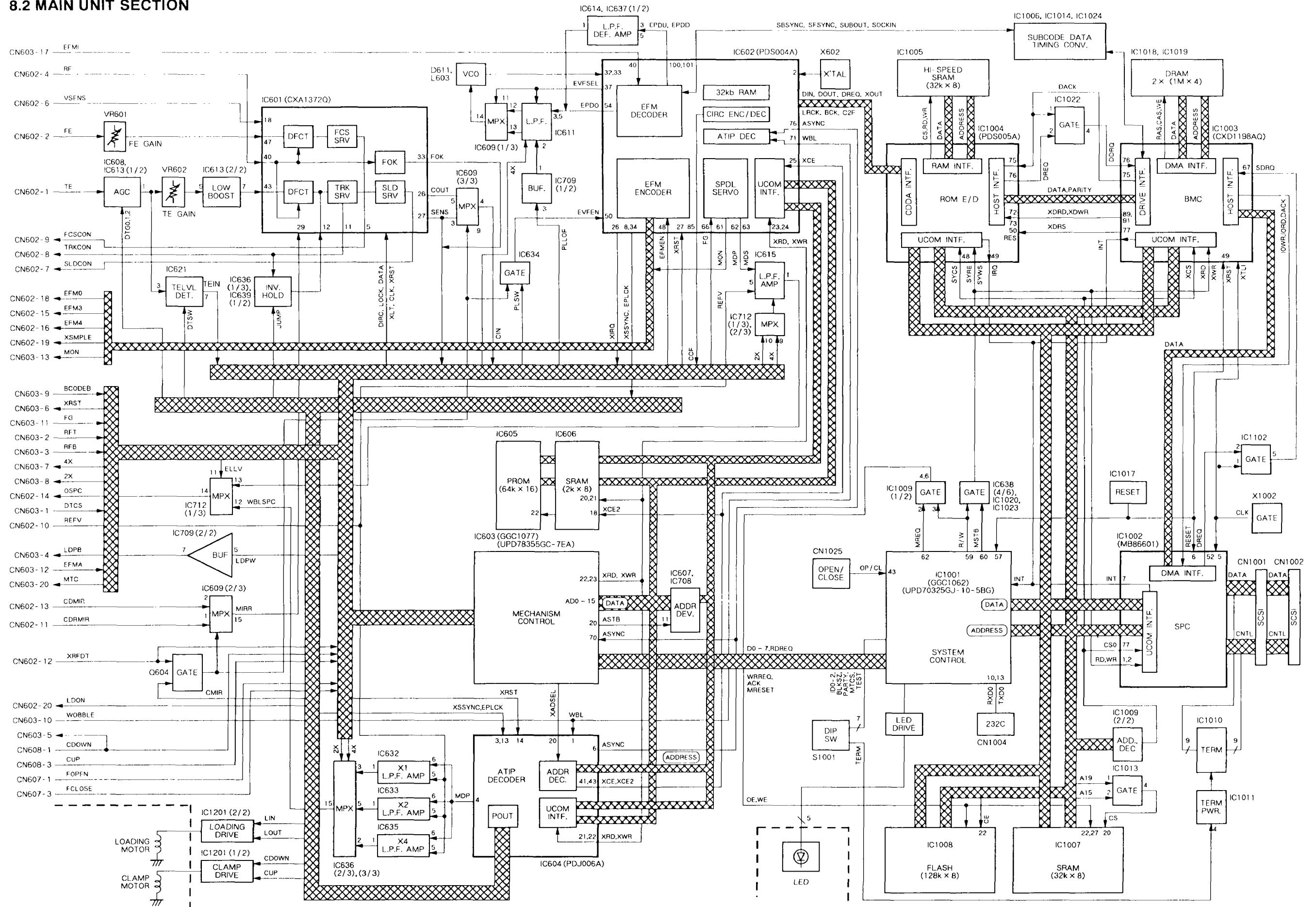
No.	Pin name	Function
1, 30	NC	No internal connection.
2-12, 23, 25-29	A0-A16	Address inputs.
13-15, 17-21	DQ0-DQ7	Data input/output.
16	Vss	Device ground.
22	\overline{CE} (E)	Chip enable.
24	\overline{OE} (G)	Output enable.
31	\overline{WE} (W)	Write enable.
32	Vcc	Power supply pin. (5.0V \pm 10% or \pm 5%)

8. BLOCK DIAGRAMS

8.1 HAMP AND SUB UNITS SECTION

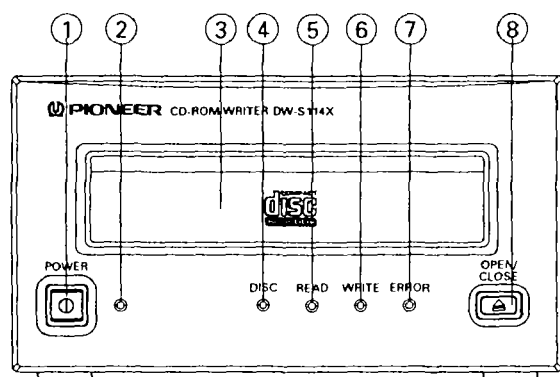


8.2 MAIN UNIT SECTION



9. PANEL FACILITIES

FRONT



① POWER switch

This switch turns the power supply ON/OFF

② POWER indicator

Lights up when the power is ON.

③ Disc tray

Auto-loading is done with the OPEN/CLOSE button. Place the disc onto the tray with the label facing up.

④ DISC indicator

Lights up when loading the disc. Blinks during reading of TOC data.

⑤ READ indicator

Lights up when during reading of CD-ROM data. Blinks during searching of CD-ROM data.

⑥ WRITE indicator

Lights up during writing of CD-ROM data.

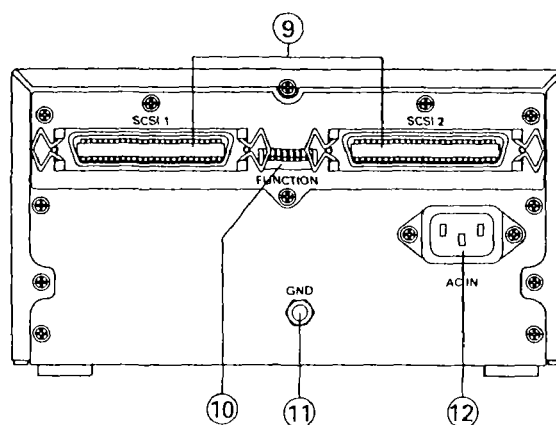
⑦ ERROR indicator

Lights up when some trouble occurs during use of the unit.

⑧ OPEN/CLOSE button

Press this button when moving the disc tray in and out.

REAR



⑨ SCSI connectors

Two SCSI amphenol 50P connectors are implemented for daisy chain configuration connectors. (Either one of the two connectors can be used.)

⑩ FUNCTION switches

Used to set the operation mode of the unit. Turn the power off to the unit before changing the operation mode. See page 6 for details.

⑪ GND terminal

⑫ AC IN

Connect to a wall outlet. The unit is designed to operate at AC 100 – 240V 50/60Hz. (There is no power supply voltage switch because switchover takes place automatically inside the unit.)

POWER-CORD CAUTION

Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause a fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.

10. SPECIFICATIONS

[General]

Disc	CD-ROM disc (conforming to YELLOW BOOK)
	CD audio disc (conforming to RED BOOK)
	CD-RECORDABLE disc (conforming to ORANGE BOOK)
Data capacity	540 megabytes
Data block size	2048 bytes/block
Data transmission speed	614 kilobytes/sec
	(continuous)
Interface	SCSI 2

[Accessories]

Power cable	1
Plug converter	1
Operating Instructions	1

NOTE:

The accessory power cable can only be used on the continent of North America. In Europe, do not use the accessory power cable. Consult with the company sales representative. "Use Only Safety Licensed Power Cable."

[Others]

Power voltage AC 100V-240V, 50/60Hz
(automatic select)
Power consumption AC 100V, 0.33A
/AC 120V, 0.33A
/AC 240V, 0.23A
Dimensions 210 (W) x 115 (H) x 399 (D) mm
8-9/32 (W) x 4-17/32 (H) x 15-23/32 (D) in.
Weight 5.3 kg (11 lb 11 oz)
Operating temperature +5 to +40°C (+41 to +104°F)
Operating humidity 10 to 85 %
Storage temperature -20 to +60°C (-9 to +140°F)
Built-in terminators

NOTE:

Specifications and design subject to possible modifications without notice, due to improvements.